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AVIATION

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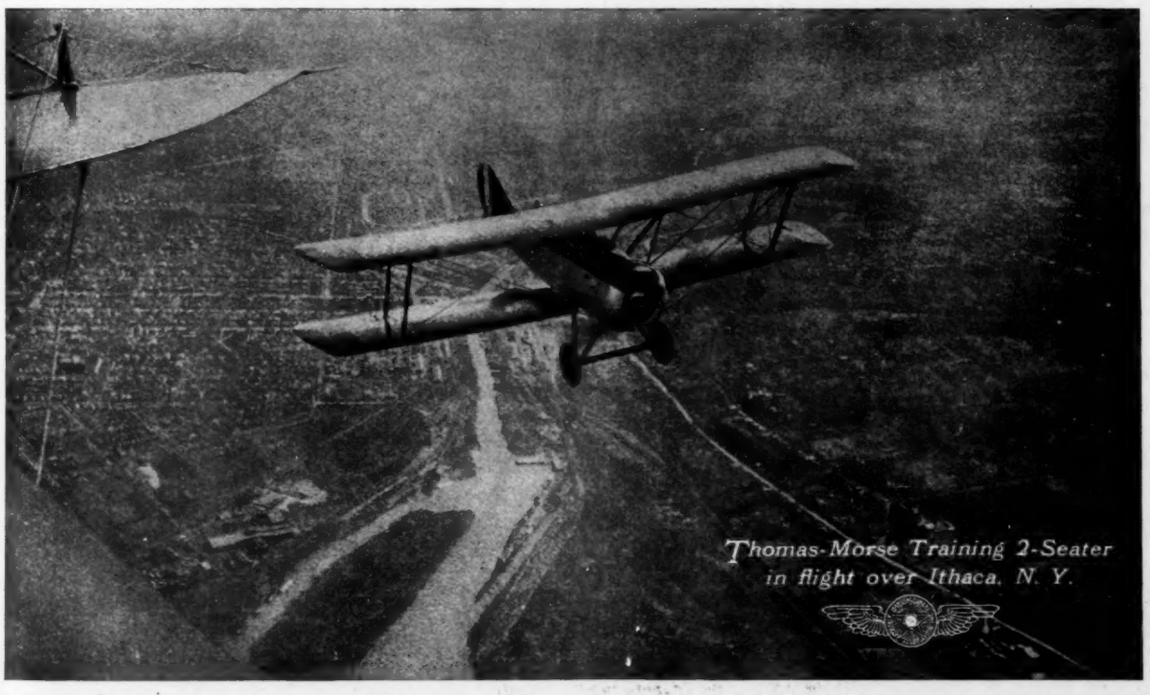

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The Unified Air Force Vindicated

OPPONENTS of the idea of a single fighting air service, controlled by a separate air department, independent of, and co-equal in status with the War and Navy Departments will do well to ponder over the speech recently made in the House of Commons by Austen Chamberlain, speaking for the British government. The most important portions of this speech are reproduced elsewhere in this issue, but it seems worth while quoting here a few of its high lights, for they make it clear why Great Britain does not intend to "wash out" her unified Air Force—as the Admiralty had hoped would occur.

If the Royal Air Force were to be reabsorbed by the army and navy, said Mr. Chamberlain, "sailors and soldiers would continue to think of the force in terms of their own service and would not pursue its development as an independent force outside the purpose with which it was associated, and for which they desire that it should be employed."

This is an argument which has been put forth many times, but we do not believe that it has ever before been expressed in such a clear and convincing language. And it was precisely because soldiers and sailors "thought in terms of their respective services", and not in terms of air warfare, that the British government created in the pressure of war the Air Ministry and the Royal Air Force. "Until that time the air was purely under naval or military command, and was only thought of in terms of naval or military warfare," said Mr. Chamberlain, and it was only after the Air Ministry was constituted with its air staff that "the aeronautical aspects of war were considered from an aerial point of view."

This was the situation which Great Britain found wanting in 1918 and remedied despite considerable opposition from the Senior Services. The opponents of the innovation then claimed that before long the unified air force would again be split up into its constituent parts and handed back to the War Office and to the Admiralty. Today, however, there can no longer be any doubt that the much criticized single air force idea was right. It is generally agreed that in the future hostilities will open up with a surprise attack from the air, and that this situation must be met by an air force which will consider the matter from an aerial, and not a naval, or a military viewpoint. Hence the second conclusion the British government has arrived at with respect to national defense: *That in the case of defense against air raids the army and the navy must play a secondary role.* This means in other words that the Royal Air Force is today Great Britain's first line of defense, while the navy is relegated to secondary place.

Students of national defense cannot afford to ignore the significance of the upheaval that has taken place in the traditions of a country which like Great Britain has for centuries chiefly relied on its naval service for keeping its shores inviolate of enemy attacks.

The National Balloon Race

ONE of the fascinating things about ballooning is that every race, in fact every flight, is different from every other, even though starting from the same place. In this year's race there is the added variable of a new starting point.

Milwaukee furnishes most interesting possibilities both from a meteorological and geographical standpoint. It lies directly in the path of most of the cyclonic storms which sweep across the country; and the date selected (May 31) is just about on the dividing line between spring and summer conditions. Thus almost any kind of weather is possible, with a probability of several different kinds in the course of the one race. The speed for example may be anything from zero up to 150 m.p.h.

The large bodies of water nearby will give plenty of incentive for careful piloting, and the proximity of the Canadian wilderness will make it important to carry good camping equipment. But such things do not discourage a real balloon "fan", for the long record of safety in ballooning has made it almost axiomatic that no matter how tight a place a balloonist is in there is always a way out for anyone who will "use his head."

Entirely aside from its recognized scientific value, ballooning as a sport has the supreme virtue of furnishing a maximum of trills with a minimum of danger. So here's to Milwaukee, the scene of this year's balloon classic!

Radio in Aviation

MANY people recently have been talking about the use of radio in connection with aviation. The term "Block System of Signals" has been used rather freely in these discussions. In a sense, this term is a misnomer when applied to aviation, as the freedom from the necessity of using such devices is one of the many advantages of aerial transport. The railroads are required to use the block system to prevent trains on the same track from running into each other; there is no necessity of warning various airplanes flying on an airway when there are other machines going in the same or opposite direction.

However, radio will be used by "dispatchers" in much the same way as it is used at sea, that is, to keep track of, and give instructions to, ships. A much more rigid control of air traffic will be necessary in the neighborhood of airports to avoid dangerous congestion, as the space available for taking off and landing will become more and more limited as the traffic increases. In fact, an entirely new method will have to be developed for air traffic. The experience obtained in railroad management and vehicular traffic control will be but small aid, as the new mode of transport is a very different matter. But, taking everything together, it is very much simpler and hence tends to be safer.

British Goverment Justifies Royal Air Force

"It Would be a Retrograde Step to Abolish the Air Ministry And Reabsorb the Air Force into the Admiralty and War Office"

—Austin Chamberlain in the House of Commons

For some time past there has been a certain amount of agitation in Great Britain, voiced in various newspaper articles under the inspiration of the Admiralty, to deprive the Royal Air Force of its seagoing branch, and to place it under the control of the Admiralty. The reason alleged for the proposed step was that the Royal Air Force was insufficiently co-operating with the Royal Navy in working out the various phases of naval air warfare.

An Attempt to Split the R.A.F.

On March 16, last, this agitation came to a head with a motion put before the House of Commons by Rear Admiral Sir Reginald Hall in the course of the debate on the Navy Estimates. The motion read:

"That in the opinion of this House the Naval Air Services should be put under the control of the Board of Admiralty for the full development of the efficiency of these services and for their better co-operation with the Navy, and for the most economical administration and expenditure."

This motion was defended in a long speech by Admiral Hall, and seconded by Viscount Curzon. The government reply, delivered by Mr. Austen Chamberlain, Leader of the House, took the form of a thorough justification of the Royal Air Force, as constituted, and set forth the policy the British government intends to follow with respect to that service. This speech, in the opinion of some of the keenest observers of British aeronautical matters, means that the Royal Air Force is now officially recognized as Great Britain's first line of defense—a function which had hitherto belonged to the Royal Navy—and that this status correspondingly decreases the military importance of the sea and land services.

In view of the considerable importance which attaches to the subject of a single fighting air service and a separate air department with respect to our own national defense—which is entrusted to three different air services—Mr. Chamberlain's speech is reproduced below in its essential parts.

Mr. Chamberlain's Speech

Mr. Chamberlain said:—"It seems proper that the statement of Government policy should be made by a Minister, not the head of one of these various Departments, but on behalf of the Government as a whole. It is certainly due to no lack of respect to other gentlemen who intend to speak, but I think it is for the convenience of the House that I should take the earliest opportunity of stating what our views are.

"I do not pretend tonight to lay down a policy for all time. The air arm has had, during and since the war, an extraordinarily rapid development, but he would be a bold man who would attempt as yet to define the ultimate potentialities of the Air Force or the place which it will hold in warfare whether over the sea or over the land. I can imagine without an undue strain upon my imagination developments which may change the whole course of war and which may quite conceivably lead the world in a short time to think that limitation of battleships or limitations of armaments is of very little use unless the new weapon is subjected to limitation of a similar kind.

"Accordingly in what I say I am declaring the policy of His Majesty's Government as things stand, and it is essential that that policy should be known because it is not fair to any Service, nor can the best be expected from any Service, unless they know clearly what our present policy is.

Thereupon, Mr. Chamberlain gave a description of the development of the Flying Services up to formation of the Air Ministry, and remarked:—

"It will be seen that it was war experience which led to the creation of the Air Ministry and to the constitution of a separate, homogeneous Air Force. It was not theory derived from speculation in the past, but it was practical experience, after trying a great many other experiments and the deficiencies which they left, which proved to the government in the pressure of the war, and for the successful conduct of the war, the necessity of creating the system now in force."

The Aerial Point of View

He pointed out that it was only after the Air Ministry was constituted with its air staff that the aeronautical aspects of the War were considered from an aerial point of view. Until that time the air was under purely naval or military command and was only thought of in terms of naval or military warfare.

Mr. Chamberlain recalled that Mr. Churchill had recently given the House some very interesting information as to the success of the Air Force as an independent striking force in Mesopotamia and Somaliland and said, "The Government believes that if the Air Service were reabsorbed by the Navy and the Army, this aspect of the service to be rendered by the Air Force would inevitably be relegated to the background. Sailors and soldiers would continue to think of the force in terms of their own service and would not pursue and could not be expected to pursue its development as an independent force outside the purpose with which it was associated, and for which they desired that it should be employed.

"Believing as we do, however, that the Air Forces have immense potentialities of their own, and in their own element, distinctive from their other and vitally important duties in connection with the naval and military services, the great importance of which is not in the least underrated, and convinced as we are in the future that the greatest danger to this country may well be from the action of air forces rather than naval or military forces, we consider that it would be a retrograde step at this time to abolish the Air Ministry and to reabsorb the Air Service into the Admiralty and War Office."

As to the argument that other nations had not yet a separate Air Force, Mr. Chamberlain said that more than one great Power is most anxiously canvassing the whole situation and that it was not unlikely that Great Britain should find her example followed.

The Magna Charta of the Royal Air Force

Mr. Chamberlain then made the following statement which may fairly be considered the Magna Charta of the Royal Air Force:—

"These are the conclusions at which we have arrived:

"In the first place, that the Air Force must be autonomous in matters of administration and education.

"Second, that in the case of defence against air raids the Army and Navy must play a secondary role.

"Third, that in the case of military operations by land or naval operations by sea, the Air Force must be in strict subordination to the general or admiral in supreme command.

"Fourth, that in the other cases, such as the protection of commerce and attacks on enemy harbors and inland towns, the relations between the Air Force and the other services shall be regarded rather as a matter of co-operation than of the strict subordination which is necessary when airplanes are acting merely as auxiliaries to other arms.

"Lastly, the Government have decided to appoint a Committee which will, I say without hesitation, consist either of the Standing Committee or the Sub-Committee of the Committee of Imperial Defence, to examine carefully into the system of naval and air co-operation, and to advise us how we can best secure that the Air Force should be enabled to render to the Navy, and in connection with the Navy other services, the aid that they may require."

Aero Club Closes New York Quarters

Proposes to Reorganize on National Lines in September

The Aero Club of America has closed its New York club house on 39th Street and will, until September, conduct its activities from its Washington office and from rented quarters in the Automobile Club of America, 247 W. 54th St., New York City. The furniture, library and trophies belonging to the club have been stored.

It is planned, as will be seen from the following announcement, to hold the organization together until the Aeronautic Association of U. S. A. is organized in Detroit in September. It is planned to liquidate the debts of the club by a payment by the new association for equipment, trophies and good will. It is understood that the present deficit amounts to about $20,000, and arrangements have already been made to assume this by contributions from members.

The contest committee, balloon race committee, and the foreign service committee will temporarily make their headquarters at the Automobile Club in New York.

An Official Statement

The following statement gives the plans of Howard E. Coffin who has been placed in charge of the reorganization committee:

"The cry for a non-partisan, independent league or association of patriotic citizens interested in aviaton and the progress of this new and vital part of the nation's makeup has been heard and recognized for over a year. The Aero Club of America as far back as January, 1921, records attempts of its governors to do something in this direction and it will be seen that it started a drive for membership with this idea in view. In September with the taking over of the presidency of that body by the Hon. Benedict Crowell, its efforts at nationalization were renewed and the Aero Club of America entered into negotiations with the Omaha Convention regarding the conduct and expressions of opinion to be derived in Omaha at the time of the Pulitzer race. An agreement was made with the President of the Omaha Club that a scheme of nationalization of the club and the enlisting of all interests would be put before the delegates to Omaha and their ideas obtained, the general idea being to have the head office of the Aero Club move to Washington, each district of the United States corresponding with the Corps Areas of the Army organize a headquarters for holding conventions, and each state do likewise, all reporting to the head in Washington and all to work along certain definite policies irrespective of all conflicting interests, in the hope that this country from sheer national pride if nothing else should not lag behind others in the development and conquest of the air.

"Concurrent with this Mr. Crowell, president of the club, by and with the advice of several governors evolved a policy for the proposed national body about Dec. 8, 1921.

"The Omaha Convention was called; Sidney D. Waldon of Detroit, a delegate to the convention, was made chairman and some meetings were held at which it was deemed advisable to temporarily form a new association and call it the National Air Association. Mr. Waldon was made president and it was resolved that a committee representing this new-born organization should confer with a similar committee of the old Father Aero Club of America and get some action.

"This conference of two committees took place in New York City about Jan. 9, 1922, and unanimously adopted the National Policy as laid down by Hon. Benedict Crowell and appointed what might be called a committee on Nationalization—two members from the Aero Club of America and two from the National Air Association, with Howard E. Coffin as Chairman. Instructions were given this committee to proceed, conferring with their respective boards of governors as the work progressed, the only stipulation being that the number of governors for the new body would be thirty—two from each Corps Area and twelve elected at large.

"This committee has been working hard and getting results as will be seen from a survey of the work accomplished.

"On March 16, 1922, Mr. Coffin in the dual capacity of Chairman of this Committee and at the same time Governor of the Aero Club of America presented to the Board of Governors of the Aero Club of America in regular meeting a report on his progress and it was approved unanimously. He reported that the committee hoped to raise $30,000 to purchase the goodwill and assets of the Aero Club of America and at the next annual convention of delegates in Detroit in September, 1922, turn over to that convention free of all encumbrances and subject to the wishes of that body, the following, effecting all negotiations, transfer of property and funds through a trustee body headed by Mr. Terry of New York.

"A charter for the new body named Aeronautic Association of U. S. A.

"All the assets of the Aero Club of America including its library, trophies, office equipment, medallions, plaques, goodwill and affiliations both international and national.

"A skeleton slate of officers and personnel to be elected at the convention.

"An office in Washington with possibly a New York branch.

"A cash balance in the bank depending upon the expenses incurred between April 1 and the time of the convention.

"To bring this about he would liquidate all liabilities of the Aero Club of America with a proportion of the $30,000. He suggested that the Aero Club of America be retained, but for purposes of amalgamation kept alive absolutely without expense on and after April 1, 1922.

"That the present Washington office and the New York office of the Aero Club of America devote their time to nationalization, working up the necessary accredited delegations to the big national convention in Detroit coincident with the Pulitzer race and doing everything possible to insure the success of same and bring about a rapid organization of the ideal independent powerful patriotic body pledged to speed up aviation in the U. S. And that these two offices acquaint all people and coordinate their efforts with those in authority over the whole of the U. S. by sending out pamphlets, by personal contact and lectures so that the convention work may proceed rapidly and the organization get on without a hitch or without embarrassment to the contests and other work on the three days at Detroit in September.

"All state conventions and subsequent district conventions must be brought about so that duly accredited delegates and alternates for same may be present in full force at Detroit.

"Already Sioux City, Iowa, has started one of the nine district conventions and will elect delegates from each state and alternates for the Detroit convention.

"It will be seen from above that the race meeting and concurrent convention at Detroit is certain to assume large proportions. It may even be international in scope for already some foreign countries are inquiring as to their eligibility to attend."

The British Rigid Airships

According to the London correspondent of the *New York Times*, a financial syndicate composed of Vickers, Ltd. and the Shell groups has laid before the British government a proposal for the formation of a company with a capital of £4,000,000 to start a mail and passenger airship service between England, India and Australia.

The program of development has been divided into two stages—a bi-weekly service to India and an alternate day service to India with weekly extension to Australia.

The government is asked to transfer to the company free of cost all airships, airship material and airship bases and supply wireless telegraphy and meteorological services.

Determination of Surface Area for Airships

By Edward P. Warner

Associate Professor in Aeronautical Engineering, Massachusetts Institute of Technology

As the form of airships continues to improve and as increased use of the wind tunnel leads to the production of forms of constantly lower resistance, the skin friction is becoming a more and more important factor in airship resistance and in the calculations of the power required to drive an airship. Quite aside from aerodynamic calculations, however, the area of surface of an airship envelope has, of course, a considerable importance in defining the area and weight of fabric that must go into the envelope, and calculations of skin surface are essential before a weight schedule can be prepared.

The process for finding the surface area with complete accuracy is discussed in all standard text books on naval architecture. It is not complex, but its application is tedious especially if, as is often the case in a design office, no integrators or similar mechanical computing devices are available. It is, therefore, much to be desired that some means be found for giving the surface area of an envelope at least approximately in terms of dimensions. Such approximate formulae have long been used for ships. Taylor *, for example, gives as the simplest fundamental formula

$$S = C\sqrt{DL}$$

where S is the wetted surface, D the displacement, L the mean length and C the coefficient. The coefficient C in this equation is not, however, the same for all ships but varies with block coefficient (the ratio of displacement to the volume of a rectangular block of extreme dimensions equal to those of the hull), sectional coefficient (the ratio of cross-sectional area to the area of a rectangle of breadth and depth equal to the extreme dimensions of the cross section of the hull), and ratio of beam to draft. A series of curves for determining the values of the constant under various conditions are given in Admiral Taylor's book.

Lieutenant Diehl's Formula

The problem of the airship is in some ways much simpler than that of the ship, as two of the three variable quantities just mentioned immediately disappear, the cross-sectional form of an airship practically always being circular and the ratio of breadth to depth of an envelope being 1 as a result. At worst, therefore, it should be possible to express surface area in the form of an equation containing a constant which is a function only of block coefficient, this in turn depending on the fineness of the lines of the envelope and the length of the parallel-sided center portion, if any. The problem has been attacked by Lieutenant Diehl † by two separate methods, leading to the formulae:

$$S = C \times \sqrt{VL}$$

and

$$S = C' \times DL$$

where S is the surface area, V the volume, L the length of envelope and D its maximum diameter. Lieutenant Diehl finds by calculation of C and C' for a large number of actual envelopes that both of these constants are functions of the block coefficient, the first being much more nearly constant than the second and apparently more satisfactory for general use. The values of both constants increase as the value of the block coefficient increases. The value of C for the 52 envelopes tested varied from 3.22 to 3.54 so that the largest possible error by taking a mean value would be about 5 per cent and the probable error with envelopes of normal form would be very much less than that. The value of C' similarly varies from 2.00 to 2.92 and the possible error by use of a mean value would therefore be nearly 25 per cent.

Obviously, there are several other possible forms of expression for surface area. In fact any combination of terms which gives the proper units to the equation can be employed. It will be observed that both of the formulae used by Lieutenant Diehl fulfil this condition, as the square root of VL has the same dimensions as the area, and the product of diameter and length also has the dimensions of an area. The most obvious among other possibilities are

$$S = C'' \times \frac{V}{D}$$

$$S = C''' \quad V^{2/3}$$

The writer has carried through for both of these expressions calculations made similar to those made by Lieutenant Diehl

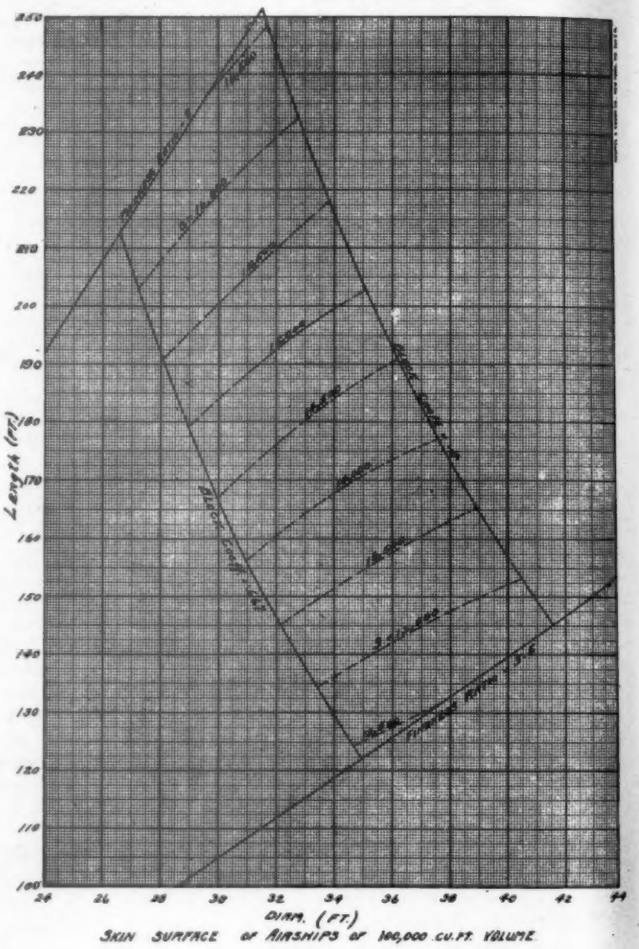


Fig. 1. Graph showing skin surface area of airships of different shapes

for the first two and has found neither of them taken alone quite as satisfactory as the expression depending on the square root of VL. The formula depending on V/D is better of the two. The constant in that case ranges from 4.73 to 5.17, a relative divergence approximately the same as that found by Lieutenant Diehl for the first of the constants. C''' varies from 5.54 to 6.93 and is therefore quite unsatisfactory.

If C'' is plotted against block coefficient, as in the case of C', it is found that the value of the constant decreases as the block coefficient increases, thus varying in the opposite direction from C. The possibility of combining the two expressions

$$S = C \times \sqrt{VL}$$

and

$$S = C'' \times V/D$$

therefore suggests itself.

* Speed and power of Ships, by D. W. Taylor; New York, 1910, pp. 40-48.

† "Surface Area Coefficients for Airship Envelopes", by Lieut. W. S. Diehl, U.S.N., Technical Note No. 86, National Advisory Committee for Aeronautics.

There are, of course, two simple ways of combining expressions of this sort. The combination may be either additive, by taking the surface area as the sum of two terms, or the two may be combined into a single term by averaging the exponents. If the latter method be employed there is secured the formula:

$$S = C'''' \frac{V^{3/4} L^{1/4}}{D^{1/2}}$$

The introduction of fractional exponents in this way makes the formula a very troublesome one to use, and it should therefore be avoided if possible. If, on the other hand, the surface be assumed to be made up of two parts, one part varying as the square root of VL while the other part varies in proportion to V/D, the formula for surface area thus becoming the sum of two terms, a relatively simple expression can be secured. It is found in practice that very satisfactory results are obtained by taking the average value of the first of these portions of the area three times as large as the other. The formula then becomes:

$S = \frac{3}{4}C \times \sqrt{VL} + \frac{1}{4}C' \times V/D$, or taking the mean values of C and C'' as 3.4 and 4.9, respectively

$S = 2.55 \sqrt{VL} + 1.22\ V/D.$

The application of this formula to the same 52 forms used by Lieutenant Diehl showed the maximum error to be 3.1 per cent. The area was correct within 1 per cent in 30 cases, and the error exceeds 2 per cent in only four instances. The accuracy is quite sufficient to justify the use of the formula in practically all ordinary design computations.

To illustrate the use of this formula, it has been applied to the simple geometrical cases of the cylinder, ellipsoid, and double cone, the first and last of these shapes being more extreme than any form ever used for an airship.

CYLINDER

Length = L, diameter = D

L/D	True Surface area	Surface area by formula	per cent error
3	3.66 LD		12.0
4	3.53 LD		8.8
5	3.45 LD	3.22 LD	6.7
6	3.40 LD		5.3
7	3.36 LD		4.2
8	3.34 LD		3.6

ELLIPSOID

Length = L, diameter = D

L/D	True Surface area	Surface area by formula	per cent error
3	2.58 LD		3.9
5	2.51 LD	2.48 LD	1.2
8	2.48 LD		0.0

DOUBLE CONE

Length = L, diameter = D

L/D	True Surface area	Surface area by formula	per cent error
3	1.656 LD		1.9
5	1.601 LD	1.627 LD	1.6
8	1.584 LD		2.7

In order to give a graphical illustration of the workings of this formula, Fig. 1 has been plotted. Fig. 1 gives the skin surface area for airships of various forms, but all having a volume of 800,000 cu. ft., the curves of equal surface being plotted with length and diameter as coordinates.

It will be observed that the portion of the figure in which the curves are drawn is bounded by two straight and two slightly curved lines. The upper and lower boundary lines represent fineness ratios, or ratios of length to diameter, of 8 and 3½ respectively. The lines on the right and left represent block coefficients of 0.4 and 0.667, respectively. The fineness ratios and block coefficients for actual airships always lie within these limits and the length and diameter of an actual ship of the prescribed volume will therefore always be found within the area defined by the four-sided boundary.

Aviation in the Netherlands

Aviation in Holland comprises the Naval Air Service, the Military Air Service, the Civil Air Service and the Colonial Air Service, all under an Advisory Air Commission. The plan for an Air Ministry in Holland has definitely been given up, at least for the present, though it is doubtful if ever, in time of peace, Naval, Military and Civil Aviation will be united under an Air Ministry. The reason for the defeat of this plan is probably due to the divergent needs of these Air branches and the lack of any strong individual as Air Minister whom these branches could trust with their particular aspirations.

A central purchasing office has been established, to which bids for all material are sent and which does the entire purchasing for all the Air Services. There is likewise one Research Institute, namely, Ryks Studiedienst voor Luchtvaart, which serves all the Air branches and which is paid for by subsidies which are carried on the annual appropriations of the Departments of the Navy, Army and Colonies, and of the Waterstaat.

The Director of the Air Service of the Army regulates and controls his own service without any interference or cooperation, other than that noted below, from any other department. The Chiefs of the various other Air Services do likewise; however, an Air Commission, consisting of the Commander and the Chief Engineer of the Navy Air Service, the Army Air Service, the Civil Air Service, the Colonial Air Service, and one representative from the Ryks Studiedienst, meets once a month. This Commission has the authority to definitely decide upon matters of Air policy which are to be made subject of legislation and upon all matters touching the cooperation or assistance to be rendered by one branch to another in any case. At the same time the engineers of the various branches who are present bring up any technical matters of interest which they have discovered or which they desire to have discussed by the Commission as a whole. This Commission has the right to summon before it any technical or other experts or advisors which it may desire. In the opinion of various Dutch airmen the above outlined form of "Air Government" will function splendidly as long as there is one strong member of the Commission who is able to effectually direct its activities. The representative for Civil Aviation on the above Commission states that to date there is no outstanding man on the Air Commission and that the activities of this body are not particularly progressive.

The Fokker F4 ten-passenger transport airplane (400 hp. Liberty engine) taxi-ing into a field. For description see our issue of Feb. 6, 1922

For a U. S. Academy of Aeronautics

Resolution by Senator Walsh Asks War and Navy Secretaries To Report on Advisability of Establishing Aerial Academy

Senator Walsh of Massachusetts on April 3 introduced in the Senate a resolution under which the Secretary of the Navy and the Secretary of War would be directed to report to Congress on the advisability of establishing a school of aeronautics to be known as the United States Academy of Aeronautics, to which cadets would be appointed in much the same manner as cadets are now appointed to compete for commissions in the Army and the Navy.

The senator from Massachusetts has for some time been devoting considerable study to the air needs of the United States and as a result of his study he has come to the conclusion that one of the best ways to stimulate interest in aeronautical matters throughout the country is by the establishment of a school which will be to the Air Service what West Point is to the Army and Annapolis is to the Navy.

Text of the Resolution

The text of the resolution follows:

Whereas immediate and adequate consideration and development of the science of aeronautics is vital to the commercial and industrial expansion and to the protection and prosperity of the United States, and

Whereas, the science of aeronautics is recognized by all nations as dominant factor in relation to transportation facilities and the national defense, and

Whereas, many foreign nations, cognizant of the necessity and importance of aircraft have initiated programs of mail and passenger transportation far superior to the present policy of our Government, with reference to the stimulation, maintenance and advance of aeronautics for all national purposes, and

Whereas, aircraft is indispensable for the patrolling and for the protection of our coast and boundaries, and to supplement to a considerable degree naval craft, coast artillery defenses, and other means of protection and defenses now maintained by the Army and Navy, and

Whereas at the Conference for the Limitation of Armaments no action was taken to reduce, limit or control the aircraft of the countries represented, although the development of air craft had a pronounced effect upon the reduction and limitation of navies, and

Whereas, it should be apparent to the most casual observer that a sufficient and properly trained personnel capable of developing, instructing and directing aeronautics, and available for the national defense is extremely important, and

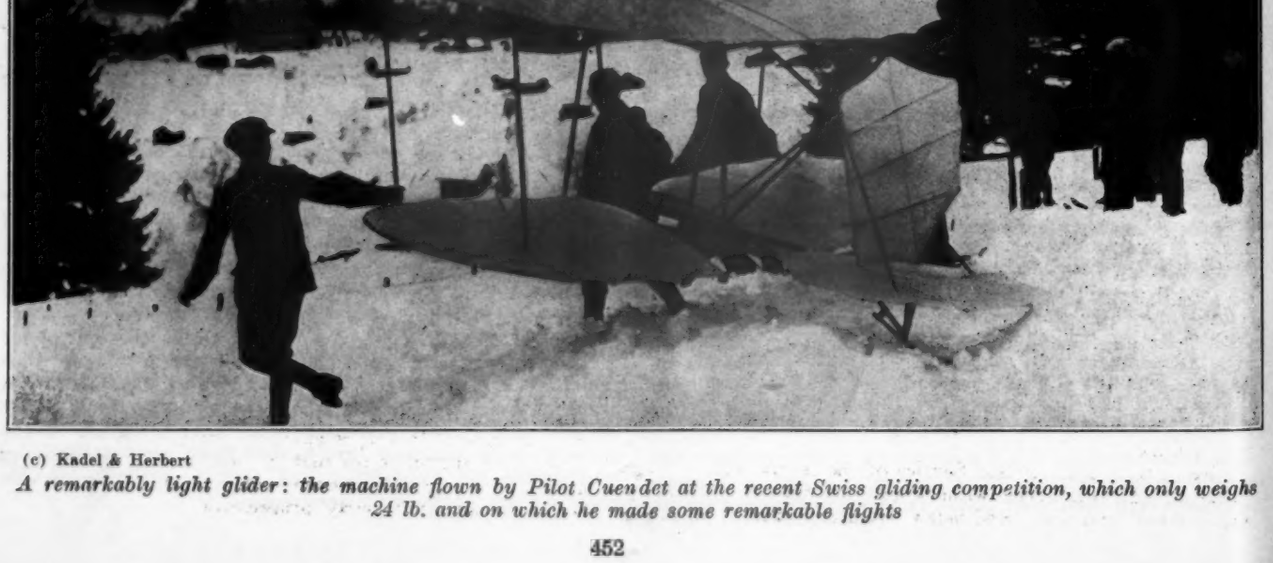
Whereas, it daily becomes more evident that if the United States is not to be completely out-distanced in the field of aeronautics, and is not therefore to be left defenseless, a separate school of aeronautics should be created and maintained, or separate schools of aeronautics should be established in the United States Military Academy and in the United States Naval Academy; therefore, be it

Resolved: That the Secretary of War and the Secretary of the Navy are directed to report to Congress (1) whether or not it is feasible and advisable to establish a school of aeronautics, to be known as the United States Academy of Aeronautics, with buildings, grounds and equipment necessary for instructing and training cadets; (2) whether or not it is practicable to use a part of the buildings and grounds of the United States Military Academy and of the United States Naval Academy for separate schools in aeronautics, to the end that young men desirous of qualifying for commissions in the United States Air Service, may be appointed as cadets to such separate aeronautical schools in the same manner as cadets are now appointed to qualify for commissions in the United States Army and the United States Navy and (3) whether or not it is feasible to take over one of the existing navy yards or arsenals for the purposes of converting the same into a Government plant for the development and manufacture of aircraft, of various kinds suitable for national commercial and defense purposes.

Senator Walsh proposes to press for immediate action on the resolution he introduced, and is hopeful that the Senate will join him in asking for an investigation of the air needs of the United States.

—*Boston Transcript*

Gliding Experiments in Switzerland



(c) Kadel & Herbert

***A remarkably light glider**: the machine flown by Pilot Cuendet at the recent Swiss gliding competition, which only weighs 24 lb. and on which he made some remarkable flights*

"Who's Who in American Aeronautics"

(Copyright, 1921, by The Gardner, Moffat Co., Inc.)

The biographical sketches of men who are prominent in American Aeronautics are printed periodically in AVIATION. The first series will be shortly published in a more durable form, and revised issues will be published semi-annually to take care of the frequent changes in station of Army and Navy officers, and such other changes as may occur. As errors and omissions are liable to occur in a compilation of this character, interested parties are requested to notify "Who's Who" Editor of the necessary corrections so the record may be kept up to date.

Frederick Henry Harvey

HARVEY, FREDERICK HENRY, Caterer; born, Kansas City, Mo., Jan. 24, 1896; son of Ford F. Harvey and Josephina (Blair) Harvey.
Educated: St. Mark's School, Southborough, Mass.; A.B., Harvard, 1918.
Professional: With Fred Harvey, Inc. Oct. 1919 to date.
Aeronautical Activities: Sergeant, A.S., S.C., Miami, Fla., March 1, 1917; commissioned 1st Lieut. A.S., S.C., June 11, 1917; Kelly Field, July 9, 1917; in charge 27th Aero Squadron, Toronto, Canada, Aug. 12, 1917; asst. O.I.C. flying, Scott Field, Oct. 8, 1917; asst. O.I.C. flying, Ellington Field, Dec. 23, 1917; Carruthers Field, Feb. 7, 1918; promoted to Capt. O.I.C. flying, Feb. 19, 1918; staff 1st Prov. Wing, Mineola, June 7, 1918; sailed for France Oct. 18, 1918; 3rd Aviation Instruction Center Issoudun, Nov. 4 to Dec. 12, 1918; returned to U. S., Feb. 12, 1919; discharged Feb. 14, 1919; commissioned Capt. AS-ORC, April 1, 1919.
Flying Rating: R.M.A., June 11, 1917.
War Service: March 1, 1917 to Feb. 14, 1919.
Member: Flying Club of Kansas City.
Present Occupation: With Fred Harvey, Inc.
Address: Union Station, Kansas City, Mo.; home, 3617 Gillham Road, Kansas City, Mo.

Paul Edson Green

GREEN, PAUL EDSON, Architect; born, Buffalo, N. Y., May 26, 1892; son of Edward B. Green and Harriet (Edson) Green.
Educated: Nichols School, Buffalo, N. Y.; La-Villa, Switzerland; Milton Academy, Milton, Mass.; A.B. 1914, Cornell University.
Professional: Superintendent, Green & Wicks, Architects; member firm, Edward B. Green & Sons, Architects.
Aeronautical Activities: Cornell Ground School, May-July 1917; Selfridge Field, July-Sept. 1917; A.E.F. Issoudun, Nov. 1917; Clermont-Ferrand, Nov. 1917 to May 1918.
Flying Rating: Pilot and Bombing Observer.
War Service: Attached French Group Bombardment 5 and 4, March-July 1918; Battle Marne, 1918; Hdqrs. Air Service, Charge Bombardment Training.
War Honors: Croix de Guerre.
Member: Secretary and Director, Aero Club of Buffalo.
Present Occupation: Architect, Edward B. Green & Sons.
Address: 75 Magara St.; home, 230 North St., Buffalo, N. Y.

John Lloyd Manley

MANLEY, JOHN LLOYD, Deputy Collector of Internal Revenue; born, Primghar, Iowa, Aug. 26, 1895; son of J. W. Manley and Minnie M. Manley; married, Doris C. Rix, Oct. 26, 1919.
Educated: Milbank public school; University of South Dakota.
Professional: County Highway Superintendent, 1919-1920; Deputy Collector of Revenue, 1920 to date.
Aeronautical Activities: Has flown Farman, Liberty, Avion Renault, Avro, Curtiss, Sopwith, and Nieuport.
Flying Rating: French Brevet.
War Service: U. S. Army Aviation Section, Aug. 1917 to Feb. 1919.
home, Milbank, S. Dak.
Present Occupation: Deputy Collector of Internal Revenue.
Address: Revenue Office, Aberdeen, S. Dak.; home, Milbank, S. Dak.

Grover O'Neill

O'NEILL, GROVER, Investment Banking; born, St. Louis, Mo., Dec. 25, 1890; son of John G. O'Neill and Josephine Robertson; married, Catharine Gray Porter, Sept. 6, 1917.
Educated: 1916, Harvard University.
Professional: Banking business.
Aeronautical Activities: Aide to General W. L. Kenly, Director of Military Aeronautics; holds commission as Major, A.S.S.R.C.
Present Occupation: Investment Banking, Roosevelt & Son.
Address: 30 Pine St.; home, 993 Park Ave., New York City.

Paul John Carr

CARR, PAUL JOHN, Postal Clerk; born, Roanoke, Va., April 4, 1892; son of George F. Carr and Maggie Lee (Stump) Carr.
Educated: Stuarts Draft High School; Medical College of Virginia (1 yr.); University of Virginia (1 yr.)
Professional: Clerk, Post Office Department.
Aeronautical Activities: Enlisted R.A.F., Sept. 16, 1917; Leaside, Ont., Feb. 1, 1918; Camp Hicks, Tex., March 1, 1918; commissioned 2nd Lieut., March 16, 1918; final training, Narboroug, England, April 30, 1918; aerial gunnery, Buckam Newton, England, Aug. 1, 1918; France, Aug. 15, 1918; attached 107 Squadron (long distance bombing) Aug. 21, 1918; participated in over 50 bombing raids; Gosport Instructors Course, Old Sarem, England, Dec. 3, 1918; course in Wireless Telephony, Lakedown Aerodrome, England, Dec. 14, 1918; Instructor in Wireless Telephony, Dec. 30, 1918 to May 1919; returned to U. S. May 1919; flew Standard J1 in Virginia, July 1921.
Flying Rating: Pilot Aviator's Certificate No. 6314, July 22, 1918.
War Service: Sept. 16, 1917 to May 1919.
Honors: Distinguished Flying Cross, Oct. 1918; "For bravery and devotion to duty in face of heavy odds. Destroyed enemy aircraft in combat, receiving bullet wound in the wrist; crossed enemy lines with a missing engine and maneuvered plane so that two pursuing enemy aircraft were forced down, one out of control, one landing in our lines; by fire from observer's machine gun; landed plane in shell hole and reached our lines under heavy fire"; Croix de Guerre with Palm," for landing plane in German territory and returning safely with French officer, obtaining valuable information of enemy movements."
Member: Royal Aero Club; Aero Club of America.
Present Occupation: Postal Clerk.
Address: R.F.D. Box 79, Waynesboro, Va.

Edwin DeWitt Ackerman

ACKERMAN, EDWIN DEWITT, Glue Expert; born, New York State, April 25, 1874; son of Alfred S. Ackerman and Mary A. (Terpening) Ackerman.
Educated: High School; M.A., Eastman College, 1893.
Professional: Salesman, newspaperman, sales manager, 1893-1910; manufacturer of "Ackerman" pianos and player-pianos, "Lyratone" phonographs, 1910 to Aug. 1917; General Manager, Waterproof Adhesives Co., June 1919 to date.
Aeronautical Activities: Assistant to Chief, Propeller Section; Bureau of Aircraft Production, June 15, 1918 to July 14, 1918; Chief, Plywood and Glue Section, Bureau of Aircraft Production, July 14, 1918 to May 5, 1919.
War Service: 2nd O.R.T.C., Plattsburg, N. Y., Aug. 23 to Nov. 27, 1917; 1st Lieut. A.S., Feb. 13, 1918 to May 5, 1919.
Books: Water Resistant Glue—Its Production, Method of Mixing and Use.
Member: Army and Navy Air Service Association; American Legion.
Present Occupation: General Manager, Waterproof Adhesives Co.
Address: Rosendale, Ulster Co., New York.

Stanley Portesus Kerr

KERR, STANLEY PORTESUS, Aviation Mechanics; Mitchel, Ont., July 6, 1895; son of Frank Kerr and Jennie (Holden) Kerr.
Educated: Brandon High School, Man.; Collegiate Brandon.
Professional: Automobile mechanic.
Aeronautical Activities: Enlisted as flying cadet R.A.F., July 1917; commissioned 2nd Lieut., Nov. 1917; in England, Nov. 1917 to March 1918; in France, April 1918; shot down, May 1918; discharged as 1st Lieut.; ran passenger carrying business, June 1919.
Flying Rating: F.A.I. pilot's license No. 6898.
War Service: July 23, 1917 to April 13, 1919.
Address: 221 2nd Street, Brandon, Man.

David McClure

McCLURE, DAVID, Automobile Salesman; born, Harrisburg, Pa., Jan. 2, 1897; son of George S. McClure and Caroline (Hepkins) McClure.
Educated: High school, Miami, Fla., 1916.
Professional: Salesman of Real Estate with Real Estate Trust Co. of Pittsburgh, Sept. 1916 to June 1917 and also May 1919 to July 1921.
Aeronautical Activities: Training at Ohio State University Ground School, Wilbur Wright Field and Gerstner Field, June 1917 to Feb. 1918; Issoudun, France, March-May, 1918; Aerial Gunnery at Furbara, Italy, June 1918; Ferry Pilot at Orly, France, July 1918; St. Mihiel Sector with 213th Aero Squadron 3rd Pursuit Group, Aug.-Sept. 1918.
Flying Rating: Reserve Military Aviator, Dec. 1917.
War Service: June 12, 1917 to Jan. 25, 1919.
War Honors: Sept. 18, 1918, in single handed combat with seven Fokkers near Metz, shot down three of them before being wounded and shot down and taken prisoner; three victories officially confirmed.
Member: Aero Club of America; Aero Club of Pittsburgh.
Present Occupation: Automobile Salesman.
Address: c/c J. W. Kemp, 8th and Lime Sts.; home, 184 Ramona Drive, Riverside, Calif.

Floyd J. Logan

LOGAN, FLOYD J., Aircraft Dealer; born, Deerfield, Mich., Oct. 29, 1885; son of E. W. Logan and Anna Logan; married, Elizabeth Brooks, Aug. 24, 1918.
Educated: Deerfield High School; Cleary Business College, Ypsilanti, 1903; LL.B., Detroit College of Law, 1907.
Professional: Practiced law, Aug. 1, 1907 to Nov. 1, 1916; automobile distributor in Montana, July 1, 1908 to Dec. 6, 1915; automobile distributor in Western Washington, Dec. 6, 1915 to July 1, 1916; automobile distributor in Western Washington, Eastern Washington, Northern Idaho and Western Montana, July 1, 1916 to Sept. 26, 1919.
Aeronautical Activities: Distributor of Curtiss airplanes in Ohio and general aeronautical jobber, Sept. 26, 1919 to date; Pres. Floyd J. Logan Aviation Co., general flying, photographic work, etc.
Present Occupation: Curtiss distributor and aeronautical jobber.
Address: 712 West Superior Ave., Cleveland, Ohio; home, 3602 Euclid Ave., Cleveland, Ohio.

William Thomas Brady

BRADY, WILLIAM THOMAS, Efficiency Engineer; born, Anna, Ill., March 12, 1896; son of Albert A. Brady and Mary Ellen Brady.
Educated: Anna High School, 1913; 1917, University of Illinois.
Professional: Efficiency Engineer, Corn Products Refining Co., 1919 to date.
Aeronautical Activities: University of Illinois Ground School; Rich Field; Ellington Field; Night and Day Bombing; Instructor, Taliaferro Field; Aerial Gunnery, Garden City, L. I., N. Y.
Flying Rating: Reserve Military Aviator; Aero Club of America License No. 2235.
Present Occupation: Efficiency Engineer.
Address: Corn Products Refining Co., Argo, Ill.; home, Lawton Road, Riverside, Ill.

Frank James Coyle

COYLE, FRANK JAMES, Investment Bonds; born, Chicago, Ill., Nov. 2, 1885; son of Michael O. Coyle and Katherine E. Coyle; married, Betty O'Keefe, Dec. 11, 1915.
Educated: Public Schools; Hyde Park High School; Ph.B., University of Chicago.
Professional: Investment Bonds.
Aeronautical Activities: Flew from Jan. 1918 to Aug. 1919; 6th Aero Squadron, Honolulu, H. T.
Flying Rating: Reserve Military Aviator.
War Service: Army.
Present Occupation: Investment Bonds.
Address: 208 LaSalle St.; home, 5823 Dorchester Ave., Chicago, Ill.

Charles Galloway Blackard

BLACKARD, CHARLES GALLOWAY, Lawyer; born, Somerville, Tenn., June 21, 1895; son of James Washington Blackard and Louise White Blackard.

Educated: Brownsville High School, Tenn.; A.B. Emory and Henry College, 1917; LL.B., Cumberland University, 1920.

Professional: Journal Clerk, Senate, Tenn.

Aeronautical Activities: U.S.S.M.A., Atlanta, July 1 to Aug. 18, 1917; Wilbur Wright Field, Aug. 18 to Dec. 17, 1917; Ellington Field, Dec. 17, 1917 to April 8, 1918; Camp Dick, April 8 to May 2, 1918; Post Field, May 2 to June 7, 1918; Selfridge Field, June 7 to Sept. 9, 1918; overseas, Sept. 16, 1918; 9th Squadron, Nov. 1, 1918; Trier, Germany, Nov. 22, 1918; returned U. S., June 22, 1919; Mitchel Field, June 22 to Aug. 1, 1919; discharged, Aug. 2, 1919.

Flying Rating: R.M.A., March 22, 1918.

War Service: July 1, 1917 to June 22, 1919.

Present Occupation: Lawyer.

Address: 420 Stahlman Bldg., Tenn.:, home, 1610 16th Ave. South, Nashville, Tenn.

John R. Gammeter

GAMMETER, JOHN R., Process Engineer; born, Akron, Ohio, Mar. 27, 1876; son of Christian Gammeter and Anna Gammeter; married, Susie Garman, Dec. 18, 1898.

Educated: Public Schools.

Professional: Rubber business, 25 years.

Aeronautical Activities: Founded aerial school at Silver Lake Park, 1910; operated three Curtiss and one Bleriot and one Demoiselle airplane; conducted exhibitions; purchased control, 1912; designed and built airplane, 1914; 1917-1919, in charge aeronautical work, B. F. Goodrich Co.; built with Henri Juilliot first 90,000 cu. ft. dirigible balloon in 1917; built other dirigibles and kite balloons for government; planned one man dirigible of 35,000 cu. ft.; invented Gammeter Balloon Gas Valve and numerous accessories.

Present Occupation: Process Engineer; B. F. Goodrich Co.

Address: B. F. Goodrich Co., Akron, Ohio; home, North Portage Path, Akron, Ohio.

David Leonard Bacon

BACON, DAVID LEONARD, Aeronautical Engineer; born, Norwich, Conn., Dec. 30, 1895; son of Leonard Woolsey Bacon and Letitia (Jordan) Bacon; married, Molly T. Hart, Oct. 18, 1920.

Educated: Public schools of Lausanne, Switzerland, Dresden, Germany, Norwich, Conn.; Ph. B., Sheffield Scientific School, Yale Univ., 1916.

Professional: Greist Mfg. Co., 1916.

Aeronautical Activities: Engineer, Gallaudet Aircraft Corp., 1917-1920; in charge of wind tunnel research for N.A.C.A., 1920 to date.

War Service: Chief Electrician, U.S.N.R.F., Mar. 1917 to Oct. 1918.

Member: American Society of Mechanical Engineers.

Present Occupation: In charge, wind tunnel research, N.A.C.A.

Address: Research Laboratory, Langley Field, Hampton, Va.

Rodney D. Williams

WILLIAMS, RODNEY D., Stock Raiser; born, Delafield, Wis., Jan. 29, 1896; son of Owen R. Williams and Mamie Robertson Williams.

Educated: Waukesha High School; Carrol College (ex '17).

Professional: Scientific farming, 1914-Aug.1, 1917, 1919-1922.

Aeronautical Activities: Flying Cadet, Toronto, Aug. 1 to Oct. 31, 1917; 17 Squadron, Nov. 5, 1917 to Jan. 30, 1918; 3 Squadron, R.A.F., Feb. 1, 1918 to June 30, 1918; 17 Squadron, June 30 to Aug. 23, 1918.

Flying Rating: R.M.A.

Honors: Cited British and American dispatches and by General Pershing.

Present Occupation: Stock Raiser.

Address: Route 1, Templeton, Wis.

Henry Edwards Toncray

TONCRAY, HENRY EDWARDS, Commercial Pilot; born, Troup, Tex., July 30, 1894; son of E. H. Toncray and Annie (Edwards) Toncray; married, Marie Blanchard, Nov. 21, 1921 (while flying over New Orleans).

Educated: Troup High School.

Professional: Automobile and electrical business to 1913.

Aeronautical Activities: Commercial flying, 1913-1921; organized Gulf States Aircraft Co.

Flying Rating: R.M.A.

Member: Aero Club of America.

Present Occupation: Vice Pres. and Gen. Mgr., Gulf States Aircraft Co.

Address: 300 Spring St.,Shreveport, La.; home, 2805 James Ave., Shreveport, La.

Ernest Lester Jones

JONES, ERNEST LESTER, Director, U. S. Coast and Geodetic Survey; born, East Orange, N. J., April 14, 1876; son of Charles H. Jones and Ada (Lester) Jones; married, Virginia Brent Fox, September 28, 1897.

Educated: Baldwin School, High School, Orange, N. J.; Newark Academy, N. J.; 1898, Princeton University, A.M., 1919.

Professional: Hydrographic and Geodetic Engineer.

Aeronautical Activities: Member of First Aerial Coastal Patrol Commission.

War Service: Major at beginning of World War, then commissioned Lt. Col., Regular Army; later, commissioned Colonel; saw active service in France and Italy.

War Honors: Made Officer Maurice and Lazzaro by King of Italy; recommended for Distinguished Service Medal; French Legion of Honor.

Books: Hypsometry, Elements of Chart Making and Surveying from the Air.

Member: American Society of Civil Engineers; Washington Society of Engineers; Washington Academy of Sciences; American Association for the Advancement of Science; Aero Club of America; Princeton University Engineering Association; Princeton Club of New York; Princeton Club of District of Columbia; National Press Club; Meteorological Association; Cosmos Club; Philosophical Society of Washington; Association of Seismologists; etc.; organized first American Legion Post; first commander, George Washington Post No. 1; President, Federal Club.

Present Occupation: Director, U. S. Coast and Geodetic Survey; Commissioner, International Boundary, United States-Alaska and Canada.

Address: 2116 Bancroft Place, Washington, D. C.

Benjamin H. Roberts

ROBERTS, BENJAMIN H., Engineering; born, Eureka Springs, Ark., June 14, 1897; son of W. S. Roberts and Anna E. Roberts.

Educated: Eureka Spring High School; B.S. in E.E. 1917, Washington University, St. Louis, Mo.

Professional: General engineering practice, Secretary-Treasurer of Alexander Engineering Co. Inc. since 1919.

Aeronautical Activities: Completed flying training at Chateauroux, France, in May 1918; received French Brevet and completed flying training at Issoudun, France, in July 1918; attached to 155th Aero Squadron, Aug. 1918; made Commanding Officer of 155th Aero Squadron in Nov. 1918 and commanded squadron until discharged March 1919.

Flying Rating: French Brevet; Pilots License, Federation of Aeronautics International.

Member: American Association of Engineers.

Present Occupation: Secretary-Treasurer, Alexander Engineering Co.

Address: Rogers, Ark.; home, Eureka Springs, Ark.

Joseph Robert Rosson

ROSSON, JOSEPH ROBERT, Newspaper Publisher; born, Scottsboro, Ala., May 31, 1896; son of Joseph Robert Rosson and Fannie (Hodges) Rosson.

Educated: Public schools of Cullman, Ala.; Cullman County High School; University of Alabama.

Aeronautical Activities: Graduated U. S. School of Military Aeronautics, Georgia Tech., Dec. 1917; 17th Squadron, completed pilot training, Park Field, Tenn., March 1918; Gunnery Instructor, Camp Dick; completed course at Issoudun, France, Aug. 1918; transferred to Aerial Gunnery School, St. Jean de Monts, France, as Instructor.

Flying Rating: Reserve Military Aviator, March 1918.

Present Occupation: Newspaper.

Address: 114 Third Avenue West; home, 912 First Avenue West, Cullman, Ala.

John Wallis Bishop

BISHOP, JOHN WALLIS, Saleman; born, Berlin, Md., June 8, 1892; son of Claud Pitts Bishop and Florence Gordon (Dilworth) Bishop; married, Otellie Huebner, Dec. 31, 1917.

Educated: Yonkers Public Schools No. 15 and No. 6; Yonkers High School.

Professional: Salesman, surgical specialties, 1913-1917.

Aeronautical Activities: Enlisted, R.F.C., Nov. 20, 1917; England, April 1918; Overseas, Aug. 6, 1918; 66 Squadron, Aug. 14, 1918 to March 1919; civilian flying in Pennsylvania, July-Nov. 1919.

Flying Rating: Scout Pilot, 1st Class.

War Service: Nov. 20, 1917 to March 1919.

Present Occupation: Real Estate Saleman.

Address: 141 West 36 St., New York City; home, 205 West 57 St., New York City.

Robert Nicholas Wilford

WILFORD, ROBERT NICHOLAS, Copper Business; born, De Soto, Wis., Sept. 20, 1892; son of James Wilford and Ellen Wilford; married, Marianne E. Earhart, Sept. 14, 1918.

Educated: Public school of De Soto, Wis.; high school at Aurora, Ill.; B.S. 1917, University of Illinois.

Professiongl: Agriculture to fall of 1917; Texas Oil Co. Refinery at Port Arthur, Tex. from Feb. 1919 to March 1920; flying in Butte, Mont., from April to June 1920; Anaconda Copper Mining Co., June 1920 to date.

Aeronautical Activities: Ground School, University of Illinois, Nov. 1917 to Jan. 1918; training at Rich Field, Brooks Field and Taylor Field; since discharge has been flying various types of planes in Butte, Mont.

Flying Rating: Reserve Military Aviator, May 1918.

War Service: Infantry, Sept. 1917 to Nov. 1917; Army Aviation, Nov. 1917 to Dec. 1918.

Present Occupation: Anaconda Copper Co.

Member: Aero Club of America; American Legion.

Address: P. O. Box 175, Wyoming, Ill.

Harold Olcott Sloan

SLOAN, HAROLD OLCOTT, Importer; born, Brooklyn, N. Y., June 22, 1894; son of Francis Henry Sloan and Jessie (Vanderoef) Sloan; married, Elsa W. Schmidt, July 11, 1918.

Educated: Pawling School, Pawling, N. Y.

Professional: In the rubber business until the beginning of the war; since the war, Vice President and Treasurer of Gomez & Sloan, Inc., Importers.

Aeronautical Activities: Ground School at Cornell, graduated Dec. 1917; training at Gerstner Field; commissioned May 1918; Instructor in advanced acrobatics at Gerstner Field; Instructor in Aerial Gunnery and Combat at Rockwell Field.

Flying Rating: Reserve Military Aviator.

War Service: Enlisted at Plattsburg Barracks and discharged at Rockwell Field, Jan. 1919.

Present Occupation: Importer, Vice President and Treasurer, Gomez & Sloan, Inc.

Address: 244 Water St., New York City; home, 11 Larchmont Court, Larchmont, N. Y.

Harry McLaughlin Baldwin

BALDWIN, HARRY McLAUGHLIN, Farmer; born, Brooklyn, Wis., June 23, 1895; son of Boyd M. Baldwin and Minnie Baldwin; married, Clara E. Zum Brunnen, Dec. 31, 1918.

Educated: Brooklyn & Belleville High School; B.S., University of Wisconsin, College of Agriculture.

Aeronautical Activities: O.T.C., Fort Sheridan, Aug. 27 to Nov. 27, 1917; commissioned 2nd Lieut., Nov. 27, 1917; Engineer, Officers Ground School, Columbus, Ohio, Dec. 10, 1917, M.I.T., Jan. 13, 1918; Airplane Mechanics School, Barron Field, Feb. 14 to April 23, 1918; Asst. Engineer Officer, Barron Field, April 23 to Aug. 31, 1918; discharged, Feb. 28, 1919.

War Service: Aug. 27, 1917 to Feb. 28, 1919.

Member: American Legion.

Present Occupation: Farmer.

Address: Rural Route No. 1, Brooklyn, Wis.

John Alexander Steward

STEWARD, JOHN ALEXANDER, Student; born, Chattanooga, Tenn., Aug. 6, 1897; son of Clarence Starr Steward and Anna M. Steward; married, Anna M. Blispinghoff, 1890.

Educated: Public schools; Preparitory School, McCallie; studying for B.S. at University of Virginia at present time.

Aeronautical Activities: Ground School; 9th Detachment of Cadets, Oct. to March 1918; French School of Aviation at Chateauroux, France; 3rd A.I.C. at Issoudun; 213th Squadron 3rd Pursuit Group, Oct. 1918 to Feb. 1919.

Flying Rating: Reserve Military Aviator.

War Service: July 1917 to July 1919.

Present Occupation: Student at University of Virginia.

Address: University of Virginia, Charlottesville, Va.; home, Battery Place, Chattanooga, Tenn.

Claude L. Airhart

AIRHART, CLAUDE L., Airship engineer; born, Advance, Ind., 1893; son of Cornelius Laird Airhart and Adda May (Canine) Airhart.

Educated: High School.

Professional: Lumber business, 1910-1912; electric power station operation, 1912-1916.

Aeronautical Activities: Enlisted Dec. 10, 1916, A.S., S.C.; on flying status from Jan. 1919 to March 1920, lighter-than-air.

Member: B.P.O.E.; Airship Engineering Society, McCook Field; American Legion.

Present Occupation: Field Test Mechanician (Airship Engineer).

Address: McCook Field, Dayton, Ohio; No. 133 Bellview Apts., Dayton, Ohio.

Notices to Aviators

Issued by Hydrographic Office, U. S. Navy

Landing fields—Information.—The following information concerning landing fields in Arizona has been received from the office of the Chief of Air Service, War Department:

California

Eureka, Eureka Field.—Owned by the Hill estate; latitude 40° 45′ N., longitude 124° 10′ W.

This field is 1,200 by 600 ft., adjoining the city on the east; glass covered nursery on the south, city on the west.

Prevailing wind, northwest; altitude 20 ft.

Good dry weather field.

Gas and oil can be purchased in the city.

Fallbrook, Fallbrook Field.—Owned by Mr. J. Oneil; latitude 33° 23′ N., longitude 117° 15′ W.

Field 1,800 by 500 ft.; located 1½ miles south of center of city; cemetery one-half mile east; olive mill one-half mile south; city on north.

Prevailing wind, northeast; altitude, 700 ft.

Field grain stubble; telephone on field.

Gas and oil can be purchased in city.

Fresno.—Latitude 36° 45′ N., 119° 45′ W.

This field is 2,200 by 650 ft.; located 6 miles northward of the city along a public highway. It has a T in the center and a hangar on the southern end.

Prevailing wind, southwest; altitude 60 ft.; condition good.

Dusty in summer.

Field has all accommodations.

Gridley, Friesley Field.—Owned by the Friesley Aircraft Corporation; latitude 39° 20′ N., longitude 121° 45′ W.

This field is 5,000 by 2,500 ft.; hangar on the northeast corner, railroad and highway parallel with field on east.

Prevailing wind, north and south; altitude, 98 ft.; condition, good.

Field has all accommodations.

Hanford, Kings County Fairgrounds.—Owned by Kings County; latitude 36° 20′ N., longitude 119° 35′ W.

Field 1,300 by 774 ft., located one-half mile west of city, in the center of a mile race track; county hospital on south.

Prevailing wind, northwest; altitude 245 ft.

Field planted to alfalfa; irrigated from April to September.

Gas and oil can be purchased in the city.

Hayward.—Latitude, 37° 38′ N., 122° 07′ W.

The field is 1,500 by 500 ft., marked by a T in the center, located 2 miles south of city along a public highway.

Prevailing wind, north and south; condition, good.

Gas and oil can be purchased in the city.

Hollister, Turner Field.—Owned by Turner Bros.; latitude 36° 50′ N., longitude 121° 20′ W.

Field 3,000 by 2,500 ft., located 2 miles north of city; windmill tower in south corner of field.

Prevailing wind, northwest; altitude, 250 ft.; condition, good.

Gas and oil can be purchased in the city.

Lakeport.— Latitude 39° 03′ N., longitude 122° 51′ W.

Field 2,200 ft. square, adjoining the city on the east; several trees with runway to land in.

Prevailing wind, east; altitude 15 ft.; condition, good.

Gas and oil can be purchased in the city.

Long Beach, Dougherty Field.—Latitude 33° 45′ N., longitude 118° 10′ W.

Field 2,000 by 400 ft., located 4 miles northeast of city. Trees on south and west, public highway leading to Los Angeles on west.

Prevailing wind, north and south; condition, good.

Field has all accommodations.

Los Angeles, Goodyear Field.—Owned by the Goodyear Rubber Co.; latitude 34° 05′ N., longitude 118° 15′ W.

The field is 5,280 by 1,360 ft., adjoining the city on the south, and is marked by a *white cross* in the center.

Prevailing wind, west; condition, good.

Field is used continually and has all accommodations.

Los Angeles, De Mille Field.—Owned by Mr. Cecil De Mille; latitude 34° 05′ N., longitude 118° 20′ W.

Three fields adjoining each other, each field 2000 by 600 ft., each with a T in the center, located about 6 miles west of center of city.

Prevailing wind, east and west; altitude, 150 ft.; condition, good.

All fields used for commercial aviation.

Fields have all accommodations.

Markleeville.—Field owned by Stodrick Bros.; latitude 38° 44′ N., longitude 119° 50′ W.

Field 5,280 by 1,320 ft., located within the city limits.

Prevailing wind, east; altitude 5,600 ft.

Sandy pasture land.

Gas and oil can be purchased in the city.

Marysville.—Latitude 39° 08′ N., longitude 121° 35′ W.

Field 1,500 ft. square, with T in center, located 2 miles north of city.

Prevailing wind, southeast; altitude 225 ft.

Old grain field.

Gas and oil can be purchased in the city.

—(*N.A. 1, 1922*)

Virginia

Hampton Roads—Aeronautical light to be established.—About Feb. 7, 1922, a *flashing white* light every *4 seconds,* flash *0.8 second, eclipse 3.2 seconds,* of 4,000 candlepower will be established, 65 ft. above the water, on the corner of hangar No. 1, Naval Air Station, Naval Operating Base, Hampton Roads.

The light is located 1,400 yds. 94° 30′ from the clock tower.

Approximate position: 36° 57′ N., 76° 18′ W.

—(*N.A. 3, 1922.*)

Note

Landing facilities no longer available at the following cities and towns.—The following cities and towns report that landing facilities are no longer available as of Feb. 1, 1922:

Hot Springs, Ark.; Forest City, Ark.; Hemet, Calif.; Marysville, Calif.; Portersville, Calif.; San Bernardo, Calif.; Middletown, Conn.; Avena, Ill.; Belleville, Ill.; Carrollton, Ill.; Chatsworth, Ill.; Delavan, Ill.; Galesburg, Ill.; Joliet, Ill.; Mattoon, Ill.; Ottawa, Ill.; Pierron, Ill.; Urbana, Ill.; Fowler, Ind.; New Richmond, Ind.; Bonapart, Iowa; Abilene, Kans.; McPherson, Kans.; Lewiston, Me.; Battle Creek, Mich.; Caro, Mich.; Decatur, Mich.; Deli Mills, Mich.; Flint, Mich.; Fowler, Mich.; Milan, Mich.; Niles, Mich.; Mayer, Minn.; Pine Creek, Minn.; Red Wing, Minn.; Wabasha, Minn.; Ironton, Mo.; New Haven, Mo.; St. Genevieve, Mo.; Wentzville, Mo. Drummond, Mont.; Livingston, Mont.; Syracuse, N. Y.; Goldsboro, N. C.; Raleigh, N. C.; Huntington, Tenn.; Hicks, Tex.; Petersburg, Va.; Suffolk, Va.; Desoto, Wis.; Oconomowoc, Wis.

NOTE.—These fields must hereafter be considered as available for emergency landings only.

—(*N.A. 3, 1922*)

Boston C. of C. for Wadsworth Bill

The Board of Directors of the Boston Chamber of Commerce on April 5 unanimously voted their approval of the bill now before the Congressional Committee on Interstate and Foreign Commerce, to establish a bureau of civil aeronautics in the Department of Commerce and to regulate and control aircraft in Interstate and Foreign Commerce.

In consequence of this vote, President Everett Morss of the Chamber sent the following letter to Congressman Samuel E. Winslow, Chairman of the Committee, urging the Committee to consider the bill favorably.

Dear Sir:

The feeling is growing in Massachusetts among those who have had an opportunity to study aviation at all that there can be no proper commercial aeronautical development until there is adequate regulation of aircraft, to prevent reckless flying and to eliminate the "gypsy flyer".

The latest indication of this growing sentiment is in the Massachusetts legislature. As you may know, a bill has been introduced in the legislature to provide for construction of a central airplane landing field at Boston by the state. This field would act as a nucleus for the aviation development of Massachusetts and New England. But the question has been raised by a number of members of the legislature, and rightly too, I believe, of whether it would be advisable to establish a field near a large city, such as Boston, until there is some regulation of flying.

It is true that Massachusetts now has a law on the statute books governing the operation of aircraft, but this was drawn up before aviation had reached anything like its present development, and is totally inadequate to care for the present-day commercial development of aircraft. Furthermore, we do not believe that the question of regulation can be solved by different sets of regulations in the various states. The only way to regulate aircraft properly is through a basic set of regulations, effective throughout the United States. To these, if desirable, individual states could add special regulations to care for conditions of an essentially local character.

As President of the Boston Chamber of Commerce, and as a citizen of Massachusetts who is interested in seeing aviation develop commercially, I strongly urge your Committee to consider favorably the bill now before you to establish a Bureau of Civil Aeronautics in the Department of Commerce, and to regulate and control aircraft in interstate and foreign commerce.

EVERETT MORSS

Portugal to Brazil Flight

Captains Sacadura and Coutinho, Portuguese naval aviators, started from Lisbon on the morning of March 30 in an attempted flight to Pernambuco, Brazil. They arrived safely at the end of the first stage of their journey at Las Palmas, Canary Islands in the afternoon of the same day, having covered 710 miles in 8½ hr.

The two fliers left Las Palmas on the second leg of their 3200 mile flight at 8:30 a. m. on April 5, and arrived at St. Vincent, Cape Verde Islands, at 5:20 p. m.

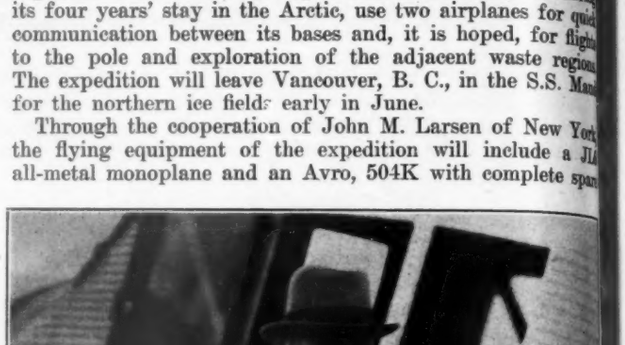
The distance from the Canaries to the Cape Verde Islands is 816 miles. The third leg, from the Cape Verde Islands to the Island of Fernado Noronha, is 1,390 miles, and from there to the Brazilian coast at Pernambuco 278 miles. The third leg, if accomplished, will be second only in overseas distance to that of Capt. Sir John Alcock in his notable transatlantic flight from Newfoundland to Ireland, more than 1,900 miles, in the Summer of 1919. The longest non-stop flight made by the American naval seaplane NC4 from Newfoundland to the Azores earlier in the same year was approximately 1200 miles.

Press reports have so far failed to state the type of seaplane Captains Sacadura and Coutinho are using for this flight, save that it is a floatplane of comparatively small dimensions, and that it carries a fuel supply of 18 hr. The machine may be the special type of Fairey seaplane which was recently launched in England.

Amundsen's Polar Air Fleet

As was briefly reported in the last issue of AVIATION, the expedition commanded by Capt. Roald Amundsen, will during its four years' stay in the Arctic, use two airplanes for quick communication between its bases and, it is hoped, for flights to the pole and exploration of the adjacent waste regions. The expedition will leave Vancouver, B. C., in the S.S. Maud for the northern ice fields early in June.

Through the cooperation of John M. Larsen of New York the flying equipment of the expedition will include a JL6 all-metal monoplane and an Avro, 504K with complete spare



Roald Amundsen standing beside the JL6 monoplane he will take to the North Pole

parts and supplies. The JL6 spares will include wheels, pontoons and skiis. The flying equipment is said to be valued at $40,000, of which Mr. Larsen has personally donated over $25,000. A thorough demonstration of the practicability of operating the JL6 monoplane in extremely cold temperatures was made by Mr. Larsen during February, March and April, 1921, when he flew via Edmonton and Peace River, Alberta, to Fort Norman, Northwest Territory, within a few degrees of the Arctic circle.

With Slim Lewis as pilot, the JL6 machine destined for the Amundsen expedition, left the Larsen Field, Long Island, on Monday, April 10, for Seattle and Vancouver, at which point it will be placed aboard Captain Amundsen's Arctic ship. St. Oscar Omdal will pilot the planes in their polar flights.

In addition to the above two airplanes Mr. Amundsen will also use for scouting purposes a Curtiss Oriole fitted with the Curtiss C6 160 hp. engine, which was presented to the explorer by C. Roy Keyes, vice president of the Curtiss Aeroplane & Motor Corp. of Garden City. The Oriole was christened on April 6 at Garden City by Mrs. L. F. Raynor, who broke a bottle of champaign over the nose of the ship and named it the Kristina. Lieutenant Omdal thereupon made a short flight in the ship. It is interesting to note that Captain Amundsen's Oriole is equipped with a duralumin propeller which, it is hoped will better withstand the extreme cold of the polar than the orthodox wooden propellers. The ship has a cruising range of 7 hr., and will be fitted with skis for landing on snow and ice.

Curtiss Buffalo Plant

The Curtiss airplane plant in Buffalo, N. Y., will, it is reported be disposed of by the government as soon as the goods stored there are inventoried and sold. The value of the goods is said to be between $4,000,000 and $5,000,000.

The goods stored at the plant consists mainly of machine tools, airplane parts, airplanes, motor trucks, wagons and lumber. Several hundred men and women are still employed there.

National Balloon Race

The Aero Club of America announces that the American National Balloon Race will be held this year from Milwaukee on May 31, under the auspices of the Aero Club of Wisconsin. The following prizes are offered: 1st—$1000, 2nd—$800, 3rd—$600, 4th—$300, 5th—$200, 6th—$100. In addition to the above, $100.00 will be paid toward the expenses of each contestant who actually starts. The entry fee (for civilians) is $50.00 payable to the Aero Club of Wisconsin, to be returned when the contestant arrives at the starting field with his complete equipment.

The starting field (Milwaukee Athletic Park) is limited in size to hold approximately ten balloons, and applications for entry will be accepted in the order of their priority. It is expected that the Army will have three entries and the Navy two.

The three leading teams at the finish will in all probability be chosen to represent this country in the International Gordon Bennett Race which starts from Geneva, Switzerland, on Aug. 6.

All applications and requests for information should be addressed to the Aero Club of Wisconsin, 208 University Bldg., Milwaukee.

Our Stored Helium Supply

The helium plant at Fort Worth, Tex., was shut down Dec. 1 last owing to lack of funds. At the time it was shut down, it had been operating in a fairly consistent manner, and had produced helium in notable quantities for a period of several months. The total production by this plant was about 2,100,000 cu. ft., and the total amount of helium which the Navy has in storage is between 2,300,000 and 2,400,000 cu. ft. In one day (24 hr.) the plant produced over 40,000 cu. ft. of helium.

There are still a few adjustments which are needed, and undoubtedly increased efficiency can be obtained in the future after further operation.

The Army bill was recently presented to Congress with an appropriation of $400,000 for helium. It is hoped that the Navy bill will be reported out with an equal amount, giving a total of $800,000. If this amount is granted, it will be possible to operate the plant at Fort Worth the larger part of next year, and this should give an amount of helium sufficient to take care of immediate needs for both the Army and the Navy.

Flying Meet at Monmouth, Ill.

The Aero Club of Monmouth, Ill., assisted by the Curtiss-Iowa Aircraft Corp. of Fort Dodge, Iowa, will hold on June 15, 16 and 17, next, a flying meet at the Monmouth flying field.

R. W. Schroeder, who will act as judge of the meet will fly to Monmouth from Chicago, and several other well known pilots will participate in the meet.

The Monmouth field is owned an operated by the Curtiss-Iowa Aircraft Corp., who maintain there an airplane for occasional flights. Monmouth is one of seven towns in that section between which irregular aerial passenger services are operated. It is reported, however, that sometime next May the Curtiss-Iowa company will institute a daily passenger service between Chicago and Kansas City, Mo., and that this line will stop at Monmouth. A new 4-seater monoplane is to be used on this service.

Drag of the Wragg Compound Wing

In the table showing the results of tests on the Wragg compound wing compared with those of other wing sections which was published in the April 3 issue of AVIATION, the Minimum Drag K_x should read *.000255* for wings closed, and *.0001275* for wings open, instead of .00255 and .001275, respectively.

Life Insurance and Aeronautics

A life insurance policy is a contract issued by a company or corporation to a person, to indemnify the beneficiary or beneficiaries in case of death.

Since a life insurance policy is a life contract between the company and the assured, it is important that the company (and therefore directly or indirectly the policy-holders) know whether the applicant is engaged in an occupation or profession which is extra hazardous or whether the physical conditions of the applicant are normal, in order that the ordinary span of life may be expected. If this information is correctly given and accepted by the company, in most cases the policy is incontestable for any cause whatsoever after having been in force one or two years, depending on the company, with the exception of fraternal orders who do not have any uniform rules in this connection. To quote the actual wording from one of these life insurance contracts, it states that "there are no restrictions under this policy while in full force of travel, residence, occupation or military or naval service." This would also include airplane flights as passenger or otherwise.

The $200,000 policy issued in November, 1919, on the life of August Bulte, who lost his life in the Miss Miami accident, has drawn three premiums to date. Through corporation insurance of its officials the Larabee mills will have collected one-half million dollars in two years. The total premiums paid was about $17,000.

It is usual in most life insurance companies to issue what is known as a "double indemnity" coverage at the approximate rate of $1.00 extra premium for each $1000 in the amount of the policy. This double indemnity stipulates that in case of accidental death of the person therein insured double the amount of the policy shall be paid to the beneficiary or beneficiaries. There is a clause in reference to this article which reads somewhat as follows:—"The double indemnity feature of this policy does not cover during military or naval service of any kind in time of war or by engaging as a passenger or otherwise in submarine or aeronautic expedition."

It may be, therefore, stated that in most cases where life insurance has been issued without question, and is in force one or two years, as per stipulated incontestable period in the contract, that any claim arising from death suffered from participating in aeronautics is not contestable by the life insurance companies.

Ceiling Test of New Longren

The following report, made by N. D. Trinler, test pilot of the Longren Aircraft Corp., concerning a ceiling test made with the new Longren biplane (60 hp. Lawrance) on March 6, 1922, at Topeka, Kan., is of interest as showing the excellent qualities of this low powered airplane. The report was issued by the Aeronautical Chamber of Commerce.

ALTITUDE	TIME	REMARKS
933 above sea level		
Surface	11:10 a. m.	Start.
1000 Ft.	1′ 14″	
2000 "	2′ 43″	Into clouds.
3000 "	4′ 15″	Still in clouds.
4000 "	5′ 49″	" " "
5000 "	6′ 29″	" " "
6000 "	8′ 00″	Above clouds, Sunshine.
7200 "	11′ 30″	Sunshine, Motor hitting fine, Strong East wind, getting cold.
8000 "	14′ 00″	Motor lost 80 r.p.m.
10000 "	20′ 00″	Very cold, Struts covered with approximately ½″ of ice.
11000 "	27′ 00″	More clouds, Motor hitting 1600 r.p.m.
12000 "	39′ 00″	
13000 "	50′ 00″	
14000 "	61′ 00″	Motor dropping fast, 1580 r.p.m., Breathing bad. Colder.
15000 "	76′ 00″	Very bright sunshine beautiful Awful cold. Motor 1500 r.p.m.
17000 "	114′ 00″	Motor running badly, extremely cold; oil line froze, pumping oil, still climbing a little.
17900 "	140′ 00″	Motor refuses to do more account oil line frozen. Extreme cold; breathing bad, giving one sense of dizziness—DOWN

Note—This test was checked with three Tachometers and above is reading of numbers 1 and 3. No. 2 varied some reading 17,700 at extreme height, or 200 ft. lower than 1 and 3.

Aviation in Canada, 1921

Statistical Summary Issued by the Air Board

NATURE OF INFORMATION *	COMMERCIAL	CIVIL GOVT.	TOTAL COMB'D
GENERAL ANALYSIS			
Firms chiefly manufacturing aircraft	1	——	1
Firms chiefly jobbing aircraft	1	——	1
Firms chiefly operating aircraft	27	——	27
Firms using aircraft as auxil. service	2	——	2
Machine-flights made	10,386	1,209	11,595
Machine-hours flown	4,347	2,200	6,547
Approx. airplane machine-mileage	242,452	84,057	326,509
Approx. seaplane machine-mileage	51,997	101,423	153,420
Total machine-mileage (flying machines)	294,449	185,480	479,929
Aver. flight duration (hr.-min.)	0- 25	1- 48	0- 34
Number of pilots carried	10,386	1,209	11,595
Number of crew carried	——	936	936
Number of passengers carried	9,153 †	1,329	10,482
Total personnel carried	19,539	3,474	23,013
Total freight or express carried (lb.)	79,850	‡	79,850
LICENSED CIVIL AIRHARBORS			
Airdromes (public)	7	——	7
Airdromes (private-commercial)	21	1	22
Licensed also for customs	6	——	6
Seaplane stations (public)	1	——	1
Seaplane stations (private-commercial)	6	4	10
Licensed also for customs	1	——	1
Airdrome-seaplane stations (priv.-com.)	——	1	1
Total airharbors (all types)	35	6	41
LICENSED CIVIL AIRCRAFT§			
Airplanes (single engined)	58	11	69
Float seaplanes (single engined)	6	3	9
Flying boats (single engined)	9	18	27
Flying boats (twin engined)	——	4	4
Total aircraft (all types)	73	36	109
LICENSED CIVIL AIR PERSONNEL			
Pilots only (flying machines)	79	14	93
Pilot/air engineers	60	17	77
Pilot/air engineer/air navigators	——	1	1
Air engineers only (flying machines)	84	31	115
Airship officer pilots (1st class)	——	1	1
Total licensed personnel	223	64	287
Unlicensed air mechanics employed	26	46	72
ANALYSIS OF FLYING ACCIDENTS			
Accidents resulting in death to one or more occupants of machine	3	1	4
Accidents resulting only in injury to occupants of machine	2	1	3
Accidents not involving injury to occupants of machine	10	1	11
Total flying accidents	15	3	18
Accidents (included above) resulting in death to third party	1	——	1
Accidents (included above) resulting only in injury to third party	——	——	——
Accidents (included above) not involving injury to third party	14	3	17
Accidents (included above) resulting in death to occupants or third party	4	1	5
Accidents (included above) resulting only in injury to occupants or third party	1	1	2
Accidents (included above) not involving injury to any personnel	10	1	11
CASUALTIES TO PERSONNEL			
Pilots killed	1	1	2
Pilots injured	3	1	4
Crew killed	¶ ——	——	——
Crew injured	¶ ——	1	1
Passengers killed	2	——	2
Passengers injured	2	——	2
Third party killed	1	——	1
Third party injured	1	——	1
Total personnel killed	4	1	5
Total personnel injured	6	2	8
ACCIDENT AND CASUALTY RATES			
Number of machine/miles per accident	19,630	61,826	26,662
Number of machine/flights per accident	692	403	644
Number of machine/hours per accident	290	733	364
Pilots killed per 1000 miles flown by pilots	.0034	.0052	.0041
Pilots injured per 1000 miles flown by pilots	.0102	.0052	.0082
Crew killed per 1000 miles flown by crew	¶ ——	——	——
Crew injured per 1000 miles flown by crew	¶ ——	.0089	.0089
Passgrs. killed per 1000 passgr./miles	.0072	——	.0042
Passgrs. injured per 1000 passgr./miles	.0072	——	.0042
Passgrs. killed per 1000 passgr. carried	.218	——	.1904
Passgrs. injured per 1000 passgrs. carried	.218	——	.1904
Third party killed per 1000 machine/miles	.0034	——	.0029
Third party injured per 1000 machine/miles	.0034	——	.0029

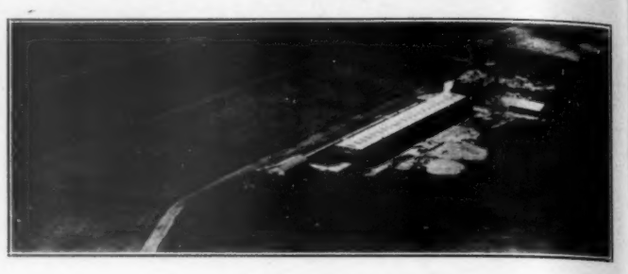
* As regards private flying during 1921, 46 persons have held private pilots' certificates only, and two private aircraft were registered.
† Only government officials and employes (on duty) were carried.
‡ Figures not available.
§ Amphibians, airships or balloons: none.

NOTE: Wherever items are marked thus (——) in the right hand columns a "Nil" return is signified.
¶ No crew carried as such.

Sperry Field, Farmingdale, L. I.

The Lawrence Sperry Aircraft Co. of Farmingdale, L. I. notifies the Sperry Field is located on the west side of the road running south out of Farmingdale, and is about ½ mile South of the center of the town. The field can further be located by a stubby water tower lying West of a long low factory building running East and West.

To find Farmingdale from Mineola, fly due East, and follow the main line of the Long Island Railroad. Farmingdale



Sperry Field, Farmingdale, L. I.

is the first fairly large town after Hicksville, and may be identified by following the road running South of Mitchel Field, it (Farmingdale) being the first town that one will come to after passing Larsen Field, South of Central Park, L. I. It has a concrete road running down the center of the town, North and South, and another concrete road running East and West, but coming into the center of the town.

French-Perfect "Pilotless" Airplane

A "pilotless" airplane equipped with various ingenious devices for its automatic control in flight was successfully tested some time ago at a French airdrome.

The airplane, its engine having been started by the mechanic, ascended automatically after it had attained sufficient speed. This was accomplished by increasing revolutions of a small fan located between the wings which put into motion a mechanism which, in turn, placed the control surfaces of the machine into position for ascent.

Once in the air, the airplane was operated by wireless and was made to circle a large field and descend.

The descent was accomplished by pressing a wireless key on the ground which released underneath the airplane a roll of wire with a weight at the end. This weight switched off the engine and moved the rear surfaces of the plane into position for a smooth landing.

Round-the-World Flight

The Britsh Embassy in Washington, D. C., has requested the Department of State to have all proper facilities extended to Sirs Ross and Keith Smith, British aviators, when they reach the United States on their attempted aerial circumnavigation of the world.

Sir Ross with his brother, Sir Keith, accomplished the flight from England to Australia more than a year ago. Their latest venture will involve a start from London, early in May, the first stop being at Lyons, France. The route lies across Southern Europe, Asia Minor, India, China, Japan and Siberia. The Pacific will be crossed at Bering Straits, landings being made on some of the Aleutian Islands and at Unalaska, in Alaska. The courses will then be across Canada to the Soo, where it will swing to the southeast to New York. Thence the line will be along the New England coast to Newfoundland, whence the start will be made across the Atlantic.

If weather conditions are favorable an attempt will be made to reach Ireland directly from Newfoundland, following the course taken by Hawker. Otherwise the plane will be directed to the Azores, thence to the European continent at Portugal, and up the west coast to the point of starting.

ARMY AND NAVY AIR NEWS

Air Service

Army Orders.—Maj. Bert M. Atkinson, A.S., upon expiration of his leave of absence, will proceed from Mather Field, Calif., to Letterman General Hospital, Presidio of San Francisco, Calif., and report in person to the commanding officer of that hospital for observation and treatment. The travel directed is necessary in the military service and is chargeable to procurement authority Q.M. 3730 P 159 A 2.

By direction of the President, First Lieut. Grissom E. Haynes, now at Walter Reed General Hospital, Takoma Park, D. C., will report in person to Brigadier General Walter D. McCaw, Medical Department, president of an Army retiring board at Washington, D. C., at such time as he may designate for examination by the board. Upon completion of his examination First Lieut. Haynes will return to the place of receipt by him of this order.

First. Lieut. James A. Healy, A. S., is relieved from duty at Ross Field, Arcadia, Calif., and will proceed to Scott Field, Belleville, Ill., and report in person to the commanding officer for duty.

First. Lieut. Alfred E. Waller, A. S., is relieved from his present duties at Mather Field, Calif., is assigned to the 28th Squadron (Bombardment), and will report in person to the commanding officer of that organization for duty.

Coat of Arms, First Anti-Aircraft Battalion, U. S. Army

Capt. Norbert Carolin, A. S., is relieved from further duty at Aberdeen Proving Ground, Aberdeen, Md., will proceed to Mitchel Field, L. I., N. Y., and report in person to the commanding officer for duty and to command the 24th Squadron (Pursuit).

Capt. Asa J. Etheridge, A. S., First. Lieut. James C. Shively, A. S., First Lieut. Haynie McCormick, A. S., First Lieut. George G. Cressey, A. S. have been relieved from their duties at Ross Field, Arcadia, Fla., and have been directed to proceed to Lee Hall, Va., and report in person to the commanding officer for duty.

First Lieut. Arthur J. Melanson, A. S., is relieved from further treatment at Army and Navy General Hospital, Hot Springs, Ark., and will proceed to Bolling Field, D. C.

First Group to Celebrate Organization—The First Group (Pursuit) now stationed at Ellington Field will celebrate its Organization Day, (May 5) this year, with flying and athletic activities on May 5 and 6. This celebration will be worth while to induce anyone interested in aviation to travel across the country to witness it.

An invitation is extended by the First Group (Pursuit) to all persons interested in air activities to be present at Ellington Field, Houston, Tex., on those dates.

The following events will be a part of the program: (1) Flying: Airplane races of every description; Exhibition of Aerial Combat, Aerial Acrobatics, Gunnery, Bombing and Acrobatic Formation Flying; Exhibition of various types of Airplanes, motors, maintenance equipment and flying training equipment; (2) Athletics: Boxing Bouts, Baseball Games (Ellington Field vs. Kelly Field), Volley Ball Championship Game, Track and Field Meet.

It is especially desired that all ex-service pilots be present as every Air Service station in this vicinity will have a large delegation at Ellington Field, and the event will be a reunion and gathering of Air Service friends.

* * *

Special Photographic Mission.—What is probably the first use of an airplane in selling real estate and housing projects took place recently when an Army plane flew from Washington to Loraine, Ohio and Wyandotte, Mich., and secured photographs for advertising an auction of property by the Shipping Board.

Through the courtesy of the Army Air Service, Lieutenants Howard K. Ramsey, pilot, and Geo. W. Goddard, aerial photographer, took off in a De Haviland plane from Bo'ling Field Monday morning after receiving a wireless message from McCook Field, Dayton that the weather there was favorable. The pictures they secured will be used in an extensive advertising campaign on the forthcoming auction of the Shipping Board housing properties.

The mission was executed as if it were a military mission in war time. The camera used was a recent development of the Army Air Service, equipped with a special long focal-length lens capable of taking pictures at an altitude of six miles. Yellow filters are used between the lens to eliminate the haze, and produce very clear results. The camera is entirely automatic, the electric power necessary for its operation being generated in the airplane. The special Panchromatic film used in this camera is 100 ft. long and 10 in. wide, and will take one hundred exposures. The detail registered on this film from great altitude is amazing. At 30,000 ft. automobiles are easily distinguished. The views over Loraine, and Wyandotte, were taken at an altitude of 5000 ft.

* * *

Carlstrom Field.—The Academic Board at Carlstrom Field met on March 7 for the purpose of passing and making recommendations on the class of student officers and cadets who commenced the course last September and who have now completed their primary training. Some fourteen officers and twenty-five cadets appeared before the board and were recommended for advance training, 10 per cent of the class being assigned to pursuit training, 25 per cent to bombing and 65 per cent to observation. Orders have been requested for the assignment of this class to advance training schools.

* * *

440th Squadron (Reserve).—San Jose, Calif., the home of the 440th Aero Reserve Squadron, was treated to an unusual event the latter part of February, the occasion being the Flying Circus held at that place under the auspices of that squadron. Some of the commissioned personnel from Crissy

Field, Presidio of San Francisco, Calif., including Maj. George H. Brett, commanding officer; Capt. A. W. Smith, Flight Surgeon, and Lieutenants Batten, Maxwell, Kiel, Liggett, Patrick, and Catlin, flew to San Jose to witness the event. The Circus attracted approximately 20,000 spectators.

* * *

Bids for Propellers, Wheels, etc.—The Air Service has called for bids on 125 Walnut propellers, for Spad airplanes with 180 hp. Wright engines. These bids were to be opened on April 12.

Bids have also been asked for by the Air Service on thirty-six 44 x 11 in. airplane landing gear wheels, thirty-six tire casings and eighty-four inner tubes. The bids were to be opened on April 11.

The Air Service is also calling for bids on ten W1A, 200 hp. engines and spares, to be opened April 18.

* * *

A. S. Officers. to leave Washington—On Feb. 10, the Secretary of War announced that he had become convinced that settlement of business left over from the war had progressed to a point where it would be possible to materially reduce the number of officers on duty in the City of Washington, and detailed to duty at other stations where their services could be used to better advantage. He accordingly directed the Inspector General of the Army to make a study of the personnel and activities of every branch of the War Department with a view to deciding whether the number might not be reduced.

The Inspector General of the Army has gone into the question thoroughly with all branches and bureaus of the War Department. Certain reductions were immediately practicable due to the conclusion or curtailment of activities. Among these are the settlement of claims and return of the last of the bodies of American soldiers from over seas. In other instances it was deemed justifiable to effect a contraction of organization in anticipation of completion in the near future of other duties which have been incident to contraction of the military establishment to a peace basis, and re-organization under the Defense Act of 1920.

The following named Air Service Officers are to be relieved from duty in Washington as soon as their services can be spared, and in no case later than June 30 next: Lt. Col. W. E. Gillmore, Maj. R. M. Jones, Capt. F. F. Christine, 1st Lieut. E. F. Carey, 1st Lieut. E. R. Page, 1st Lieut. R. J. Brown, Jr., 1st Lieut. C. G. Brenneman, 1st Lieut. W. E. Connolly, 1st Lieut. E. E. Harmon. In some instances orders have already been issued.

In addition Maj. Rush B. Lincoln will be relieved from duty in the O.C.A.S. shortly after June 30 next to enable him to attend a service school.

* * *

Promotion in the Reserves—Plans for class room instruction for officers desiring to take the examinations for promotion in the Reserve Corps were laid March 25 at a meeting of the Air Service Officers Association of the Sixth Corps Area. The meeting was held in the Army and Navy Club, Chicago. Maj. William C. McChord, Air Officer of the Sixth Corps Area, and Lt. Col. Morris N. Keck, engaged in the organization of the Reserves in this area, gave short talks on what had already been accomplished in the way of organization and the plans for the future.

According to these officers the fundamental basis for promotion in the Reserves will be that of inherent ability, rather than promotion on the basis of seniority as in the Regular Army, where it was added conditions were somewhat different and that promotion by seniority seemed to be the most practical method.

"I do not anticipate that the technical and general examinations which candidates for promotion will be called upon to pass will be very severe," said Major McChord, "Great weight however will probably be given to the candidate's demonstrated ability in civil life, his past record in the service and the extent of his present interest in the work of the Organized Reserves. All these things will be taken into consideration in connection with the examining boards estimate of his value to the Reserves in the particular rank and branch of the service for which he is taking the examination. There are many vacancies in the grades of 1st lieutenants, captains, and higher grades, which must ultimately be filled and we are bending every effort to pick men competent to fill them. It is a painstaking and difficult task. Let me repeat, that other qualifications being equal in considering candidates for vacancies, evidence of continued and sustained interest in the difficult period that the Reserve is now going through, will undoubtedly carry weight with the examining boards."

First Lieut. Kenneth T. Price of the Reserves gave a resumé of the probable line of question in the examination on Military Law. His talk will be followed from time to time by other members of the Reserve Corps, leading discussions of other subjects the examinations are scheduled to cover. Capt. P. G. Kemp, A.S.O.R.C., chairman of the association, presided at the meeting. Other reserve officers present were: Lieuts. Joseph P. Dunne, Homer S. Watt, Herman H. Woeltjen, William E. Bausch, Arthur H. Stanton, J. W. Schroeder, Henry T. Hemingway, E. G. Tuttle, R. E. Ailsworth, Leo L. Lenard, C. G. Geisler, S. J. Bovey, Raymond R. Rehm, Keith Jones, Otto Grafe, Roger F. Howe, J. C. Keogh, R. C. Kuhn, M. D. Harbula and Dallas M. Speer.

Naval Aviation

Navy Orders—Lt. Comdr. Frank T. Leighton, Det. New York Shipbuilding Corp., Camden, N. J.; to conn. f. o. USS Colorado as Senior Assistant Engineer Officer when commissioned.

Lieut. Frederic P. Culbert, Det. Office of Naval Intelligence Navy Dept.; to duty Naval Air Station Hampton Roads, Va.

Lt. (jg) Robert R. Thompson (Supply Corps), Det. R/Barracks Hampton Roads, Va.; to conn. f. o. USS Langley as Assistant for Disbursing and Asst. to Supply Officer when commissioned March 16, 1922.

Lieut. George L. Compo, Det. Naval Aircraft Factory, Phila., Pa.; to duty Naval Air Station, Pensacola, Fla.

Lieut. John M. Sheehan, Det. Air Squadrons Atlantic Fleet; to duty Naval Air Station, Pensacola, Fla. (March 23, 1922).

Lieut Frank C. Fechteler, Det. Naval Air Station, Hampton Roads, Va.; to U.S.S. Langley.

Lieut. Rico Botta, Det. Naval Air Station, Pensacola, Fla.; to Off. in Charge Aeronautical Engine Testing Laboratory, Washington, D. C.

Ens. William T. Garnett, Det. Naval Air Station San Diego, Calif.; to home. (March 25, 1922).

Lt. Comdr. Alfred S. Wolfe, Det. Naval Air Station Pensacola, Fla.; to duty R/S Charleston, S. C.

Lieut. George B. Wilson, Det. Bu. Aeronautics, Navy Dept.; to U.S.S. Langley as Senior Assistant Engineer Officer. (March 27, 1922).

* * *

More Fliers Wanted—The Navy Department is combing its corps of officers for flying material, desiring fifty officers for flying training at the Naval Flying School, Pensacola, Fla.

In this connection the Bureau of Navigation has sent out the following dispatch to all Naval Ships and Stations:

"Bureau desires fifty officers for next aviation class. Commanding officers are requested to encourage applications from officers who meet the requirements of Part C, Chapter 1, Section 2 of Bureau of Navigation Manual. Applications must reach Bureau of Navigation prior to one May."

The new class will start training on July 1 continuing until Dec. 30. Appointments will carry, it is understood the 35 per cent extra pay when actual flying begins. The course of training includes flying in all types of naval seaplanes and a thorough ground course in subjects pertaining to aviation and its naval application. The Navy claims that its school at Pensacola is undoubtedly the finest of its kind in the world, and believes that the course of training has no equal in any country.

Pointing out that aviation is one of the most important arms of the service, the Bureau calls attention to the results of the bombing tests on the German ships last summer as convincing for even the skeptical.

Hampton Roads Naval Air Station—The hydrogen plant at Hampton Roads Naval Air Station was completed recently and the installation of the electric motor completed.

The helium used in the C7 has all been recompressed and bottled, and the envelope is being inspected prior to inflation with hydrogen. The envelope of the C9 received recently, has been inspected and found serviceable but has been placed in storage with its gear and engines. On March 21 a kite balloon was inflated and tested.

The detachment of the aircraft carrier Langley have continued their landing training, making a total of forty-three precision landings during the past week on the dummy deck approximating the landing deck of their future home. Although commissioned on March 20, the Langley is still tied up in the Norfolk Yard, being completed and fitted out. To date 239 men have been transferred from the Air Station to the Langley.

In an experimental line the station at Hampton Roads is conducting motor tests with two F5L's, and twenty-five flights were made during the past week. Recently an F5L with a geared motor and propellers, loaded to 13,360 lb. gross load, climbed to an altitude of 6600 ft. in 20 min.

Daily aerological-altitude flights are being made in an N9 plane, to collect pressure, temperature and humidity records up to an altitude of 8000 ft. Compilations of a set of tables for rapid calculation of horizontal distance in pilot balloon soundings, has been begun, but will require between five and six thousand computations, it is reported.

* * *

Possible Wreck of Miss Miami—Reports received by the Hydrographic Office of the Navy indicate that possibly the wreck of the commercial seaplane Miss Miami has been located about 250 miles east of Savannah, Ga.

A message from the steamship Agwibay states that on April 3, she passed a large flying boat with top cabin awash in Lat. 32.17 and Long. 75.40. This point is about 200 miles southeast of Cape Fear, a long distance northeast of the point where the Miss Miami was lost on March 23, but as the wreck was said to be floating rapidly in a northeasterly direction, it is believed possible that it was carried up the coast by the Gulf Stream.

Marine Corps Aviation

Marine Flying Field, Quantico, Va.—Capt. Francis. P. Mulcahy, USMC, has been ordered to the Bureau of Aeronautics for duty as test pilot.

Col. Robert H. Dunlap, USMC, Brigade Commander, left under orders for Pekin, China. A formation of five VE7's escorted the Colonel to the Washington-Richmond Turnpike. Captain Mulcahy in an MB3 performed around the formation.

Brig. Gen. Mitchell, A. S., Captain Ocker and Lieutenant Bissell, U. S. A., landed at this field on Apr. 4. General Mitchell delivered an excellent talk to the Marine Corps schools on the operation of airplanes in war.

The Major General Commandant inspected this field on April 5.

The U. S. Marine Corps Reservation, Quantico, Va., was photographed from an altitude of 5500 ft. with a Kl camera, using a wind motor attachment. The mosaic has not been completed yet.

* * *

4th Air Squadron—The Officer in Charge of Aviation takes great pleasure in publishing the following letter from the Brigade Commander, First Brigade, Port-au-Prince, Haiti, to the Major General Commandant, dated March 16, 1922:

"It gives me great pleasure to bring to the attention of the Major General Commandant the very fine service rendered by the 4th Air Squadron during a series of general courts-martial held at Cape Haitien, Haiti.

"Three men were tried separately under charges growing out of the same incident, and due to the objection of the second and third man to be tried by the previous court, it was necessary to order three separate courts to sit at Cape Haitien. The limited number of eligible officers in this Brigade necessitated sending many officers to Cape Haitien. The members of the court, stenographers, typewriters and material were transported between Port au Prince and Cape Haitien by airplane. The service was rendered so efficiently and expeditiously by the 4th Air Squadron that the three trials, two of them 'not guilty' cases, were completed in a period of twelve days. Without the use of the 4th Air Squadron, the time would have been extended to more than one month, resulting in a serious lack of efficiency due to the absence of the high or ranking officers from their commands.

"The 4th Air Squadron carried out this duty without interruption to their regular carrying of mail, taking men from hill stations for emergency transfers, etc.

"In addition to Major Evans, the following officers acted as pilots: Capt. Robert J. Archibald, Capt. Arthur H. Page, Jr., Second Lieut. Guy B. Hall, Second Lieut. Horace D. Palmer, Second Lieut. Jacob F. Plachta and Marine Gunner Elmo Reagan.

/s/ "GEO. VAN ORDEN"

A special airplane flight was made by Sec. Lieut. Christian F. Schilt, to Port au Prince, Haiti, for the purpose of carrying Maj. Alfred A. Cunningham, Commanding Officer, to this station on his return from leave in the United States.

The mail flight to San Pedro de Macoris, D. R., has been changed from Tuesday and Friday to Wednesday and Saturday, picking up the mail at San Pedro de Macoris for Seibo and Hato Mayor, D. R., to be dropped from the plane on its return to Santo Domingo City, D. R.

National Guard Aviation

Twelve Aces in N. Y. N. G.—There are now more fliers in the New York National Guard credited with five or more victories in aerial combats than in the entire Air Service of the Regular Army. Among the aces enrolled in the New York National Guard are: Capt. George Vaughn, 13 victories; Capt. Elliott W. Springs, 14; Maj. G. De Frees R. Larner, 7; Lieut. Edward P. Curtis, 6; Lieut. Sumner Sewell, 7; Lieut. Howard Burdick, 7; Lieut. Lansing C. Holden, 7; Lieut. Chester E. Wright, 9; Lieut. Jesse O. Creeh, 9; Lieut. Frank L. Hale, 14; Lieut. Alexander McLananhan, 5; Lieut. Harold L. Buckley, 5.

Coming Aeronautical Events

AMERICAN

Apr. 24 — *Fourth Aviators' Ball, Hotel Astor, New York. Tickets: 80 W. 40th St.*

Apr. 30 — *Spring Show and Opening Meet, Curtiss Field, Mineola, L. I.*

May 30 — *Fourth Annual Aircraft Exhibition, Logan Field, Baltimore, Md.*

May 31 — *National Balloon Race, Milwaukee.*

June 15-17 — *Flying Meet, Monmouth, Ill.*

Sept. 4 (about) — *Detroit Aerial Water Derby, Detroit. (Curtiss Marine Flying Trophy Competition.)*

Sept. 15 (about) — *Detroit Aerial Derby, Detroit. (Pulitzer Trophy Race.)*

Sept. 30 — *First Annual Interservice Championship Meet. (In preparation.)*

FOREIGN

August — *Coupe Jacques Schneider. (Seaplane speed race.) Naples, Italy.*

Aug. 6 — *Gordon Bennett Balloon Race, Geneva, Switzerland.*

Aug. 9-24 — *Soaring and Gliding Competition, Gersfeld, Germany.*

Sept. 22 — *Coupe Henri Deutsch de la Meurthe. (Airplane speed race.) France.*

American elimination trials, if required, to be held about Aug. 15, at Mitchel Field, L. I.

Foreign News

France—The Aveline automatic airplane stabilizer, of which an illustrated description appeared in the March 21, 1921, issue of AVIATION, has recently undergone a series of tests in France. A report on tests made by the Messageries Aériennes company above Le Bourget in a Farman "Goliath" indicates that the stabilizer is capable of great services in traversing large banks of fog, and in taking off from airdromes covered in fog. In this latest test several pilots were on board the Goliath, which flew through the fog and emerged into clear air at 5000 ft. altitude, effecting the climb without difficulty and without intervention from the pilot. At this altitude several turns were made, both left-hand and right-hand. The engines were then throttled down and the machine descended to within 150 ft. from the ground, without the intervention of the pilot. During the descent the engines were several times opened up and throttled down, the machine automatically climbing when the engines were opened out and gliding when they were throttled down. Three times during the flight the pilots were changed, the machine flying entirely without pilot during these changes.

The above invention employs a form of the pendulum principle, and part of the device is electric, part pneumatic and part aerodynamic. The pendulum portion, which is only partly to be regarded as a pendulum, consists of an inclinometer in which the fluid is mercury. This mercury is contained in a disc with a narrow circular groove, and serves to make and break an electric contact which operates the valves that admit compressed air to the air cylinder whose pistons actuate the control cables.

The first air express to be fully equipped for night flying left the London Air Station for Paris recently. This machine, the Farman Goliath "Verdun", with accomodations for thirteen passengers, is used regularly now by the Grands Express Aériens on their daily service between London and Paris. In addition to softly shaded lights in the saloon, red and green electric navigation lights are fixed on the extreme tips of the wings, and a bright rear light is fitted to the tail. Two powerful electric searchlights are placed in the center of the machine below the passenger cabin, and light up the ground over which the airplane is flying. The electricity for all this lighting is supplied by two dynamos, which are driven by tiny windmills rotating rapidly in the wind produced by the airplane as it rushes through the air. Four powerful magnesium flares are suspended in pairs below each lower wing tip, and the pilot lights these by electricity as he approaches the ground, thus making landing at night an easy operation.

• • •

Holland—It is reported from Holland that exceptionally severe weather would have imposed great hardships upon the inhabitants of the many islands which lie to the north of the Dutch mainland, were it not for the timely assistance rendered by the big Fokker airplanes of the Royal Dutch Air Service Co. All boat traffic having ceased owing to the ice, the airplanes were used to deliver large quantities of food and other supplies to the islands.

The recent railroad strike in Germany has also provided an excellent opportunity for the Dutch company during the otherwise somewhat unprofitable winter season. The Fokker planes left Rotterdam for Hamburg and Bremen, there to connect with the D.L.R. line to Berlin, three times daily loaded to capacity with mail, express and passengers.

• • •

Italy—Airplanes flying over Milan, Italy, recently dropped thousands of leaflets printed in the national colors urging "Italians" to assure work for their own tradesmen "against foreign competition by buying exclusively Italian products," according to a report from the American Vice Consul.

"Italians, for the national welfare, for assuring work for our tradesmen and workmen—Maximum exportation and Minimum importation!" the leaflets read.

The action shows the concerted efforts of the country for the promotion and protection of home industries and trade by airplane propaganda.

Where to Fly

CALIFORNIA
SAN FRANCISCO, CALIFORNIA
EARL P. COOPER AIRPLANE & MOTOR CO.

ILLINOIS
CHECKERBOARD AIRPLANE SERVICE
FOREST PARK, ILLINOIS

INDIANA
One of the largest and best equipped flying fields in the United States.
CURTISS-INDIANA COMPANY
Kokomo, Indiana
ALL TYPES OF CURTISS PLANES.

MASSACHUSETTS
BOSTON AND SPRINGFIELD, MASS.
EASTERN AIRCRAFT CORP.
340 FIRST ST., BOSTON, MASS.

MINNESOTA
WHITE BEAR LAKE, MINN.
The Twin Cities' chief summer resort.
Harold G. Peterson Aircraft Company
SCHOOL OF AVIATION

NEW JERSEY NEW YORK AIR TERMINAL
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Learn on ships that cannot tail spin. Planes rented $30. hr.
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